Merchant Ship Stability | d9e385ad9ffcf1b2f547f85ac818e066

This book deals with ship design and in particular with methodologies of the preliminary design of ships. The book is complemented by a basic bibliography and five appendices with useful updated charts for the selection of the main dimensions and other basic characteristics of different types of ships (Appendix A), the determination of hull form from the data of systematic hull form series (Appendix B), the detailed description of the relational method for the preliminary estimation of ship weights (Appendix C), a brief review of the historical evolution of shipbuilding science and technology from the prehistoric era to date (Appendix D) and finally a historical review of regulatory developments of ship's damage stability to date (Appendix E). The book can be used as textbook for ship design courses or as additional reading for university or college students of naval architecture courses and related disciplines; it may also serve as a reference book for naval architects, practicing engineers of related disciplines and ship officers, who like to enter the ship design field systematically or to use practical methodologies for the estimation of ship's main dimensions and of other ship main properties and elements of ship design.

Contents include: areas & volumes, forces & moments, center of gravity, buoyancy & flotation, the righting lever & metacenter, bilging, rolling & more.

Stability and Trim for the Ship's Officer has been completely updated after twenty-two years. Aboard today's vessels, technology and computers abound as ship's gear. The once long and tedious calculations for stability, trim, and hull strength are now done in minutes. But no matter how much change the industry has undergone, the laws of physics are constant. The only way to verify that the computer is coming up with accurate figures is to read the ship's drafts. Two new chapters have been included, "Prerequisites for Stability, Trim, and Hull Strength Calculations," and "U.S. Coast Guard Questions on Stability, Trim, and Longitudinal Hull Strength." The appendix has also been updated to include the Stability Data Reference Book--August 1989 Edition,
which is the same supplied in the United States Coast Guard license examination room.

AUTHOR:

Ship Hydrostatics and Stability is a complete guide to understanding ship hydrostatics in ship design and ship performance, taking you from first principles through basic and applied theory to contemporary mathematical techniques for hydrostatic modeling and analysis. Real life examples of the practical application of hydrostatics are used to explain the theory and calculations using MATLAB and Excel. The new edition of this established resource takes in recent developments in naval architecture, such as parametric roll, the effects of non-linear motions on stability and the influence of ship lines, along with new international stability regulations. Extensive reference to computational techniques is made throughout and downloadable MATLAB files accompany the book to support your own hydrostatic and stability calculations. The book also includes definitions and indexes in French, German, Italian and Spanish to make the material as accessible as possible for international readers. Equips naval architects with the theory and context to understand and manage ship stability from the first stages of design through to construction and use. Covers the prerequisite foundational theory, including ship dimensions and geometry, numerical integration and the calculation of heeling and righting moments. Outlines a clear approach to stability modeling and analysis using computational methods, and covers the international standards and regulations that must be kept in mind throughout design work. Includes definitions and indexes in French, German, Italian and Spanish to make the material as accessible as possible for international readers.

Widely publicised disasters serve as a reminder to the maritime profession of the eminent need for enhancing safety cost-effectively and as a strong indicator of the existing gaps in the stability safety of ships and ocean vehicles. The problem of ship stability is so complex that practically meaningful solutions are feasible only through close international collaboration and concerted efforts by the maritime community, deriving from sound scientific approaches. Responding to this and building on an established track record of co-operative research between UK and Japan, a Collaborative Research Project (CRP) was launched in 1995. This volume includes selected material from the first four workshops: 1st in University of Strathclyde, July 1995 organized by Professor Vassalos; 2nd in Osaka Japan, Osaka University, November 1996 organized by Professor Masami Hamamoto; 3rd in Crete Greece, Ship Design Laboratory of the National Technical University of Athens (NTUA-SDL), October 1997 organized by Professor Apostolos Papanikolaou; and 4th in Newfoundland Canada, Institute for Marine Dynamics, September 1998 organized by David Molyneux. It contains 46 papers that represent all currently available expertise on ship stability, spanning 17 countries from around the world. The framework adopted for grouping the papers aims to cover broad areas of ship stability in a way that it provides a template for future volumes.

During the past few years there have been considerable changes in the approach to ship stability, so far as it affects the merchant seaman. The most obvious of these is the introduction of metric units, in addition, examination requirements have been increased and recommendations for a standard method of presenting and using stability information have been produced, which will undoubtedly be reflected in the various examinations.

This well-established textbook has been fully reviewed and updated by a new author to ensure a modern coverage of the contents in
depth. A new unique introduction has been written, giving ship types together with their general characteristics, to indicate to the reader actual or typical sizes of modern day merchant vessels. Four new chapters have been added dealing with Ship Squat, the Deadweight scale, Interaction and The Trim and Stability book. A new section, on Draft Surveys, is included in the Appendices. In order to give the student a better understanding of ship strength, four smaller but more detailed chapters replace the chapter covering this subject area in the previous edition. Ship Stability, with respect to motions, can be defined as the ability of a ship to return to an initial condition after she has been subjected to disturbing forces and moments. Ship Stability can also exist with respect to materials stresses and forces, where it is the ability to return to an initial state after being subjected to external or internal forces. Careful attention has been paid to the basic principles of ship stability and ship strength. Included is a generous provision of worked examples and exercise questions with answers. These ensure that the maritime student who works through this book will have a clear grasp of the topics covered. Up-to-date syllabuses and recent examination papers are included at the end of this book.

Also available on CD-ROM.

Ship Stability for Masters and Mates explores all aspects of ship stability and ship strength, squat, and interaction and trim, as well as materials stresses and forces. Organized into 56 chapters, the book looks at the relationship between ship stability and ship motion, with emphasis on group weights in a ship. It also explains how TPCs are calculated for a range of drafts extending beyond the light and loaded drafts, along with form coefficients, including the coefficient of fineness of the waterplane area. The book explains how to perform KB, BM, and KM calculations and make graphics on metacentric diagrams. It considers large-angle stability, the effect of beam and freeboard on stability, and hydrostatic curves and values for vessels that are initially on even keel. The reader is also introduced to free-surface effects of slack tanks with divisional bulkheads, how side winds affect ship stability, and the correlation between freeboard and stability curves. Other chapters focus on timber ship freeboard marks, procedures and calculations for drydocking and stability, and ship squat in open water and in confined channels. The book also includes extracts from the 1998 Merchant Shipping (Load Line) Regulations Number MSN 1752(M). This book is intended for students seeking to obtain Transport Certificates of Competency for Deck Officers and Engineering Officers and STCW equivalent International qualifications, as well as Chief Mates and Officers on Watch (Officers in Charge) on board merchant ships and other maritime personnel, port authorities, marine consultants, nautical study lecturers, and marine superintendents. Updated throughout to include new shipping industry developments and regulations, with 9 new chapters, the latest ship stability datasheets, and sample exam questions Provides a comprehensive introduction to all aspects of ship stability and ship strength, squat, interaction and trim, materials stresses and forces Concepts are supported with numerous worked examples, clear diagrams, graphs and equations to assist with understanding and application of this critical subject

This indispensable guide to ship stability covers essential topics such as flotation and buoyancy, small angle, large angle and longitudinal stability, water density effects, bilging, ship resistance, and advanced hydrostatics. Each chapter has a comprehensive list of aims and objectives at the start of the topic, followed by a checklist at the end of the topic for students to ensure that they have developed all the relevant skills before moving onto the next topic area. The book features over 170 worked examples with fully
explained solutions, enabling students to work through the examples to build up their knowledge and develop the necessary key skills. The worked examples, which range in difficulty from very simple one-step solutions to SQA standard exam questions and above, are predominantly based on a hypothetical ship. The reader is supplied with extracts from a typical data book for the ship which replicates those found on actual ships, enabling the reader to develop and practise real-life skills. This edition has been fully updated in line with the recently changed rules and regulations around ship stability and the updated national exam syllabus. Updates include corrections and clarifications to worked examples, new text on damaged stability and probabilistic stability, extra content on hydrostatic forces and centres of pressure, and extra content on stability information for small craft.

The International Code on Intact Stability 2008 (2008 IS Code), presents mandatory and recommendatory stability criteria and other measures for ensuring the safe operation of ships, to minimize the risk to such ships, to the personnel on board and to the environment. The 2008 IS Code took effect on 1 July 2010. The 2008 IS Code features: a full update of the previous IS Code; criteria based on the best state-of-the-art concepts available at the time they were developed, taking into account sound design and engineering principles and experience gained from operating ships; influences on intact stability such as the dead ship condition, wind on ships with large windage area, rolling characteristics and severe seas. This publication also presents Explanatory Notes to the 2008 IS Code, intended to provide administrations and the shipping industry with specific guidance to assist in the uniform interpretation and application of the intact stability requirements of the 2008 IS Code.

The European zebra mussel in the Great Lakes, a toxic Japanese dinoflagellate transferred to Australia--such biologically and economically harmful stowaways have made it imperative to achieve better management of ballast water in ocean-going vessels. Stemming the Tide examines the introduction of nonindigenous species through ballast water discharge. Ballast is any solid or liquid that is taken aboard ship to achieve more controlled and safer operation. This expert volume Assesses current national and international approaches to the problem and makes recommendations for U.S. government agencies, the U.S. maritime industry, and the member states of the International Maritime Organization. Appraises technologies for controlling the transfer of organisms--biocides, filtration, heat treatment, and others--with a view toward developing the most promising methods for shipboard demonstration. Evaluates methods for monitoring the effectiveness of ballast water management in removing unwanted organisms. The book addresses the constraints inherent in ballast water management, notably shipboard ballast treatment and monitoring. Also, the committee outlines efforts to set an acceptable level of risk for species introduction using the techniques of risk analysis. Stemming the Tide will be important to all stakeholders in the issue of unwanted species introduction through ballast discharge: policymakers, port authorities, shippers, ship operators, suppliers to the maritime industry, marine biologists, marine engineers, and environmentalists.

The Kemp and Young series is designed to provide an introduction to the topic covered that will be suitable and useful for both those who are newly at sea and those whose practical experience is limited to narrow areas and wish to expand their knowledge. The concise presentation of the subject matter is made possible by the reduction of the work to its simplest terms. This is generally achieved through the omission of unnecessary mathematics or mathematical concepts, and the generous use of diagrams and illustrations. Where appropriate, worked examples are used to reiterate the points being made in the text and will be found useful in furthering the reader's knowledge of the subject and familiarity with the contents. Rapid reference to the substance of each topic can
be made by use of a carefully constructed index.

In the 50 years that separated Warrior from Dreadnought there occurred a revolution in warship design quite unparalleled in naval history; a period that began with the fully-rigged broadside ironclads and ended with the emergence of the great battleships and battlecruisers that were to fight in the First World War. The author explains how nineteenth-century designers responded to developments in engine technology, armour protection and armament in their attempts to develop the best possible fighting ships. He details the development of more efficient engines that brought about the demise of the sailing warship, and the competition between armour and armament, with every increase in the power of guns stimulating the development of ever more sophisticated methods of protection. Importantly, he explains that the Victorian Royal Navy, far from being the reactionary body it is so often depicted as, was, in fact, at the forefront of technological change, for example in the employment of torpedoes and the development of countermeasures to them. Full accounts are given of the significant naval events and battles of the period, making the book a fine narrative history as well as a brilliant work of warship reference. D K BROWN was a distinguished naval architect who retired in 1988 as Deputy Chief Naval Architect of the Royal Corps of Naval Constructors. He published widely on the subject of warship design and built a reputation as a clear and brilliant commentator on the development of the ships of the Royal Navy. He died in 2008.

Understanding ship stability is critical for all maritime students or professionals who are studying for a deck or engineering certificate of competency, or seeking promotion to a higher rank within any branch of the merchant marine or Navy. The sixth edition of the now classic ‘Ship Stability’ provides a comprehensive introduction to all aspects of ship stability and ship strength, squat, interaction and trim, materials stresses and forces. * The market leading ship stability text, widely used at sea and on shore * New content inclues coverage of now-mandatory double-skin tankers and fast ferries * Meets STCW (Standards of Training, Certification & Watchkeeping) requirements and includes self-examination material: essential reading for professionals and students alike

The Condition Assessment Scheme (CAS) for oil tankers was adopted in 2001 and is applicable to all single-hull tankers of 15 years or older. Although the CAS does not specify structural standards in excess of the provisions of other IMO conventions, codes and recommendations, its requirements stipulate more stringent and transparent verification of the reported structural condition of the ship and that documentary and survey procedures have been properly carried out and completed. The Scheme requires that compliance with the CAS is assessed during the Enhanced Survey Program of Inspections concurrent with intermediate or renewal surveys currently required by resolution A.744(18), as amended.--Publisher's description.

The Maritime Engineering Reference Book is a one-stop source for engineers involved in marine engineering and naval architecture. In this essential reference, Anthony F. Molland has brought together the work of a number of the world’s leading writers in the field to create an inclusive volume for a wide audience of marine engineers, naval architects and those involved in marine operations, insurance and other related fields. Coverage ranges from the basics to more advanced topics in ship design, construction and operation. All the key areas are covered, including ship flotation and stability, ship structures, propulsion, seakeeping and
maneuvering. The marine environment and maritime safety are explored as well as new technologies, such as computer aided ship design and remotely operated vehicles (ROVs). Facts, figures and data from world-leading experts makes this an invaluable ready-reference for those involved in the field of maritime engineering. Professor A.F. Molland, BSc, MSc, PhD, CEng, FRINA, is Emeritus Professor of Ship Design at the University of Southampton, UK. He has lectured ship design and operation for many years. He has carried out extensive research and published widely on ship design and various aspects of ship hydrodynamics. * A comprehensive overview from best-selling authors including Bryan Barrass, Rawson and Tupper, and David Eyres * Covers basic and advanced material on marine engineering and Naval Architecture topics * Have key facts, figures and data to hand in one complete reference book

This textbook provides readers with an understanding of the basics of ship stability as it has been enacted in international law. The assessment of ship stability has evolved considerably since the first SOLAS convention after the sinking of the RMS Titanic, and this book enables readers to familiarise themselves with the most up-to-date modern day methodology, as well as looking ahead to the effects on ship design over the next fifty years. The author not only explains the methodology of probabilistic ship damage as required by the International Maritime Organisation (IMO), but also details the new requirements to assess certain sizes and classes of ships to the seven second-generation ship stability requirements. Many textbooks that are currently used by undergraduates focus on the geometric-centric deterministic approach to the assessment of ship stability, whereas this book also includes material on the classes of ships that are now required to have probabilistic ship damage assessment, as has only recently been agreed by the IMO. Basic Naval Architecture: Ship Stability contains up-to-date information, making it ideal for university students studying ocean or marine engineering, as well as being of interest to students on naval architecture and ship science courses. Highly illustrated and including chapter studies for ease of learning, the book is an ideal one-volume textbook for students.

This well-established textbook has been fully reviewed and updated by a new author to ensure a modern coverage of the contents in depth. A new unique introduction has been written, giving ship types together with their general characteristics, to indicate to the reader actual or typical sizes of modern day merchant vessels. Four new chapters have been added dealing with Ship Squat, the Deadweight scale, Interaction and The Trim and Stability book. A new section, on Draft Surveys, is included in the Appendices. In order to give the student a better understanding of ship strength, four smaller but more detailed chapters replace the chapter covering this subject area in the previous edition. Ship Stability, with respect to motions, can be defined as the ability of a ship to return to an initial condition after she has been subjected to disturbing forces and moments. Ship Stability can also exist with respect to materials stresses and forces, where it is the ability to return to an initial state after being subjected to external or internal forces. Careful attention has been paid to the basic principles of ship stability and ship strength. Included is a generous provision of worked examples and exercise questions with answers. These ensure that the maritime student who works through this book will have a clear grasp of the topics covered. Up-to-date syllabuses and recent examination papers are included at the end of this book.

Merchant Ship Stability presents the theory and application of methods for maintaining ship stability. It serves as a textbook for deck officers and first year degree students. The book discusses the methods of Simpson's rules for measuring ship form, the principle of floatation, finding the position of the center of gravity, and the effect of the center of gravity of the vessel not being on the centerline,
the effect of having liquids within the vessel which are free to move and the effect of suspending weights. Topics on the assessment of stability of large angles of heel, regulations about merchant vessel stability, and dry docking and grounding are provided as well. Deck officers and merchant marine students will find the book very useful.

Includes bibliographical references and index.

The Oxford Handbook of Maritime Archaeology is a comprehensive survey of the field at a time when maritime archaeology has established itself as a mature branch of archaeology. This volume draws on the expertise of nearly fifty international scholars who examine the many distinct and universal aspects of the discipline.

This indispensable guide to ship stability covers topics such as flotation and buoyancy, small angle, large angle and longitudinal stability, water density effects, bilging, ship resistance, and advanced hydrostatics. Each chapter has a comprehensive list of aims and objectives at the start of the topic, followed by a check-list at the end of the topic for students to ensure that they have developed all the relevant skills before moving onto the next topic area. The book features over 170 worked examples with fully explained solutions, enabling students to work through the examples to build up their knowledge and develop the necessary key skills. The worked examples, which range in difficulty from very simple one-step solutions to SQA standard exam questions and above, are predominantly based on a hypothetical ship, with the reader supplied with extracts from a typical data book for the ship which replicates those found on real ships, enabling the reader to develop and practise real-life skills.

In response to a continuing high loss of commercial fishing vessels and crews, the U.S. Congress has mandated development of new safety requirements for the industry. This volume provides a blueprint for an integrated national safety program that responds realistically to industry conditions, with priority on the most cost-effective alternatives. Fishing Vessel Safety addresses the role of the U.S. Coast Guard and the fishing industry and evaluates such safety measures as vessel inspection and registration, and the training and licensing of fishermen. It explores vessel condition, the role of human behavior, the problem of weather prediction, the high cost of insurance, and more.

The ever-growing demand for commercial activities at sea has meant that ships are rapidly developing and that the rules governing their construction and operation are changing. Practical Ship Design records these changes, their outcomes and the reasoning behind them. It deals with every aspect of ship design and handles a wide range of both merchant ships and naval ships with authority. It provides coverage of cargo ships and passenger ships, tugs, dredgers and other service craft. It also includes concept design, detail design, structural design, hydrodynamics design, the effect of regulations, the preparation of specifications and matters of costs and economics. Drawing on the author's extensive practical experience, Practical Ship Design is likely to interest everybody involved in the design, construction, repair and operation of ships. Students and the most experienced professionals will
all benefit from the book's vast store of design data and its conclusions and recommendations.

Ship Design and Performance for Masters and Mates is a quick to use, comprehensive reference that brings the key information needed to understand ship design and performance at your fingertips. The book covers all key aspects of ship design and performance, supplemented by exam revision one-liners. It does not assume detailed theoretical knowledge, but rather builds up the reader's understanding of how the elements of ship design influence and impact on its performance, and how the engineer, crew and operators can maximise the performance of their vessel in operation. Written by an experienced marine engineering consultant, author and lecturer, this book presents key facts and formulas, backed up throughout by relevant theory, illustrations and photographs. It includes examples of modern ship-types and their general particulars and covers topics ranging from design and power coefficients to types of ship resistance; types of ship speed; types of power on ships; designing a ship's propeller; details of maximum ship squats; the phenomena of interaction of ships in confined waters; mechanisms for improving ship handling; and improvements in power output. This book is an essential introduction and reference for students and those newly at sea, as well as for anyone involved with ship design, marine engineering, naval architecture, and the day-to-day operation of ships in port. * Accessible information on understanding and improving ship performance at your fingertips * Ideal for marine engineering students and those studying for certificates of competency * Covers all key aspects of ship design and performance, with exam revision one-liners

The Kemp and Young series provides a general introduction to a number of subject areas in a style that will be ideally suited for those wishing to learn more. The concise presentation of the subject matter is made possible by the reduction of the work to its simplest terms. This is achieved through the omission of unnecessary mathematics or mathematical concepts, and the generous use of diagrams and illustrations. Rapid reference to the substance of each topic can be made by use of the carefully constructed index. The third edition of 'Ship Stability: Notes and Examples' has been updated by Dr C B Barrass, who has wide experience in both industry and the academic field. The book has been thoroughly revised and expanded to be more in line with current examinations, and now covers topics such as ship squat, angle of heel whilst turning, and moments of inertia via Simpson's Rules. Also included is a diagram showing Deadweight-Moment. Ship Stability: Notes and Examples is an invaluable tool to aid in the passing of maritime examinations. Updated volume of the popular Kemp and Young series for the new Millennium 66 fully worked examples, with a further 50 giving final answers

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