

STRUCTURAL ANALYSIS 2 NPTEL

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Vibrations and Waves in Continuous Mechanical Systems - Peter Hagedorn
2007-10-22

The subject of vibrations is of fundamental importance in engineering and technology. Discrete modelling is sufficient to understand the dynamics of many vibrating systems; however a large number of vibration phenomena are far more easily understood when

modelled as continuous systems. The theory of vibrations in continuous systems is crucial to the understanding of engineering problems in areas as diverse as automotive brakes, overhead transmission lines, liquid filled tanks, ultrasonic testing or room acoustics. Starting from an elementary level, *Vibrations and Waves in Continuous Mechanical*

Systems helps develop a comprehensive understanding of the theory of these systems and the tools with which to analyse them, before progressing to more advanced topics. Presents dynamics and analysis techniques for a wide range of continuous systems including strings, bars, beams, membranes, plates, fluids and elastic bodies in one, two and three dimensions. Covers special topics such as the interaction of discrete and continuous systems, vibrations in translating media, and sound emission from vibrating surfaces, among others. Develops the reader's understanding by progressing from very simple results to more complex analysis without skipping the key steps in the derivations. Offers a number of new topics and exercises that form essential steppingstones to the present level of research in the field. Includes exercises at the end of the chapters based on both the academic and practical experience of

the authors. Vibrations and Waves in Continuous Mechanical Systems provides a first course on the vibrations of continuous systems that will be suitable for students of continuous system dynamics, at senior undergraduate and graduate levels, in mechanical, civil and aerospace engineering. It will also appeal to researchers developing theory and analysis within the field.

Matrix Analysis of Structures - Aslam Kassimali 2011-01-01

This book takes a fresh, student-oriented approach to teaching the material covered in the senior- and first-year graduate-level matrix structural analysis course. Unlike traditional texts for this course that are difficult to read, Kassimali takes special care to provide understandable and exceptionally clear explanations of concepts, step-by-step procedures for analysis, flowcharts, and interesting and modern examples, producing a

technically and mathematically accurate presentation of the subject. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Structural Health Monitoring With Application To Offshore Structures -

Chandrasekaran Srinivasan 2019-04-24 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.

Mining of Massive Datasets - Jure Leskovec 2014-11-13

Now in its second edition, this book focuses on practical algorithms for mining data from even the largest datasets.

Characterization of Nanophase

Materials - Zhong Lin Wang 2000 Engineering of nanophase materials and devices is of vital interest in electronics, semiconductors and optics, catalysis, ceramics and

magnetism. Research associated with nanoparticles has widely spread and diffused into every field of scientific research, forming a trend of nanocrystal engineered materials. The unique properties of nanophase materials are entirely determined by their atomic scale structures, particularly the structures of interfaces and surfaces. Development of nanotechnology involves several steps, of which characterization of nanoparticles is indispensable to understand the behavior and properties of nanoparticles, aiming at implementing nanotechnology, controlling their behavior and designing new nanomaterials systems with super performance. The book will focus on structural and property characterization of nanocrystals and their assemblies, with an emphasis on basic physical approach, detailed techniques, data interpretation and applications. Intended readers of this comprehensive reference work are

advanced graduate students and researchers in the field, who are specialized in materials chemistry, materials physics and materials science.

Advanced Steel Design of Structures - Srinivasan Chandrasekaran 2019-11-01
Advanced Steel Design of Structures examines the design principles of steel members under special loads and covers special geometric forms and conditions not typically presented in standard design books. It explains advanced concepts in a simple manner using numerous illustrative examples and MATLAB® codes. Features: Provides analysis of members under unsymmetrical bending Includes coverage of structures with special geometry and their use in offshore applications for ultra-deep water oil and gas exploration Presents numerical modeling and analysis of steel members under fire conditions, impact, and blast loads Includes MATLAB® examples that will aid in the

capacity building of civil engineering students approaching this complex subject. Written for a broad audience, the presentation of design concepts of steel members will be suitable for upper-level undergraduate students. The advanced design theories for offshore structures under special loads will be an attractive feature for post-graduate students and researchers. Practicing engineers will also find the book useful, as it includes numerous solved examples and practical tutorials.

Computational Techniques for Process Simulation and Analysis Using MATLAB®

- Niket S. Kaisare 2017-09-18

MATLAB® has become one of the prominent languages used in research and industry and often described as "the language of technical computing". The focus of this book will be to highlight the use of MATLAB® in technical computing; or more specifically, in solving

problems in Process Simulations. This book aims to bring a practical approach to expounding theories: both numerical aspects of stability and convergence, as well as linear and nonlinear analysis of systems. The book is divided into three parts which are laid out with a "Process Analysis" viewpoint. First part covers system dynamics followed by solution of linear and nonlinear equations, including Differential Algebraic Equations (DAE) while the last part covers function approximation and optimization. Intended to be an advanced level textbook for numerical methods, simulation and analysis of process systems and computational programming lab, it covers following key points • Comprehensive coverage of numerical analyses based on MATLAB for chemical process examples. • Includes analysis of transient behavior of chemical processes. • Discusses coding hygiene, process animation and GUI

exclusively. • Treatment of process dynamics, linear stability, nonlinear analysis and function approximation through contemporary examples. • Focus on simulation using MATLAB to solve ODEs and PDEs that are frequently encountered in process systems.

Matrix Methods of Structural Analysis
- Chu-Kia Wang 1970

Cognitive Informatics, Computer Modelling, and Cognitive Science - G. R. Sinha 2020-04-08

Cognitive Informatics, Computer Modelling, and Cognitive Science: Volume Two, Application to Neural Engineering, Robotics, and STEM presents the practical, real-world applications of Cognitive Science to help readers understand how it can help them in their research, engineering and academic pursuits. The book is presented in two volumes, covering Introduction and Theoretical Background, Philosophical and

Psychological Theory, and Cognitive Informatics and Computing. Volume Two includes Statistics for Cognitive Science, Cognitive Applications and STEM Case Studies. Other sections cover Cognitive Informatics, Computer Modeling and Cognitive Science: Application to Neural Engineering, Robotics, and STEM. The book's authors discuss the current status of research in the field of Cognitive Science, including cognitive language processing that paves the ways for developing numerous tools for helping physically challenged persons, and more. Identifies how foundational theories and concepts in cognitive science are applicable in other fields Includes a comprehensive review of cognitive science applications in multiple domains, applying it to neural engineering, robotics, computer science and STEM Presents basic statistics and cognitive maps, testing strategies of hypothesis, maximum likelihood

estimator, Bayesian statistics, and discrete probability models of neural computation Contains in-depth technical coverage of cognitive applications and case studies, including neuro-computing, brain modeling, cognitive ability and cognitive robots

Theory and Practice in Earthquake Engineering and Technology - T. G. Sitharam 2022-06-07

This book contains diverse topics relevant to earthquake engineering and technology. The chapters are of interest to readers from various disciplines, as the different chapters discuss popular topics on earthquake engineering and allied disciplines. The chapters have adequate illustrations and tables for clarifying underlying concepts. The reader can understand the fundamental concepts easily, and the book is highly useful for practice in the field in addition to classroom learning.

Innovations in Smart Cities Applications Edition 2 - Mohamed Ben Ahmed 2019-02-06

This book highlights cutting-edge research presented at the third installment of the International Conference on Smart City Applications (SCA2018), held in Tétouan, Morocco on October 10-11, 2018. It presents original research results, new ideas, and practical lessons learned that touch on all aspects of smart city applications. The respective papers share new and highly original results by leading experts on IoT, Big Data, and Cloud technologies, and address a broad range of key challenges in smart cities, including Smart Education and Intelligent Learning Systems, Smart Healthcare, Smart Building and Home Automation, Smart Environment and Smart Agriculture, Smart Economy and Digital Business, and Information Technologies and Computer Science, among others. In addition, various novel proposals

regarding smart cities are discussed. Gathering peer-reviewed chapters written by prominent researchers from around the globe, the book offers an invaluable instructional and research tool for courses on computer and urban sciences; students and practitioners in computer science, information science, technology studies and urban management studies will find it particularly useful. Further, the book is an excellent reference guide for professionals and researchers working in mobility, education, governance, energy, the environment and computer sciences.

Analysis of Aircraft Structures -

Bruce K. Donaldson 2008-03-24

As with the first edition, this textbook provides a clear introduction to the fundamental theory of structural analysis as applied to vehicular structures such as aircraft, spacecraft, automobiles and ships. The emphasis is on the application of fundamental concepts

of structural analysis that are employed in everyday engineering practice. All approximations are accompanied by a full explanation of their validity. In this new edition, more topics, figures, examples and exercises have been added. There is also a greater emphasis on the finite element method of analysis. Clarity remains the hallmark of this text and it employs three strategies to achieve clarity of presentation: essential introductory topics are covered, all approximations are fully explained and many important concepts are repeated.

Ocean Structures - Srinivasan Chandrasekaran 2017-01-06

This book addresses the concepts of material selection and analysis, choice of structural form, construction methods, environmental loads, health monitoring, non-destructive testing, and repair methodologies and rehabilitation of ocean structures. It examines various

types of ocean and offshore structures, including drilling platforms, processing platforms and vessels, towers, sea walls and surge barriers, and more. It also explores the use of MEMS in offshore structures, with regard to military and oil exploration applications. Full-color figures as well as numerous solved problems and examples are included to help readers understand the applied concepts.

Matrix Analysis Framed Structures - William Weaver 2012-12-06

Matrix analysis of structures is a vital subject to every structural analyst, whether working in aero-astro, civil, or mechanical engineering. It provides a comprehensive approach to the analysis of a wide variety of structural types, and therefore offers a major advantage over traditional methods which often differ for each type of structure. The matrix approach also provides an

efficient means of describing various steps in the analysis and is easily programmed for digital computers. Use of matrices is natural when performing calculations with a digital computer, because matrices permit large groups of numbers to be manipulated in a simple and effective manner. This book, now in its third edition, was written for both college students and engineers in industry. It serves as a textbook for courses at either the senior or first-year graduate level, and it also provides a permanent reference for practicing engineers. The book explains both the theory and the practical implementation of matrix methods of structural analysis. Emphasis is placed on developing a physical understanding of the theory and the ability to use computer programs for performing structural calculations.

Introduction to Structural Analysis - Debabrata Podder 2021-12-01

This book cover principles of

structural analysis without any requirement of prior knowledge of structures or equations. Starting from the basic principles of equilibrium of forces and moments, all other subsequent theories of structural analysis have been discussed logically. Divided into two major parts, this book discusses basics of mechanics and principles of degrees of freedom upon which the entire paradigm rests followed by analysis of determinate and indeterminate structures. Energy method of structural analysis is also included. Worked out examples are provided in each chapter to explain the concept and to solve real life structural analysis along with solutions manual. Aimed at undergraduate/senior undergraduate students in civil, structural and construction engineering, it: Deals with basic level of the structural analysis (i.e., types of structures and loads, material and section

properties up to the standard level including analysis of determinate and indeterminate structures) Focuses on generalized coordinate system, Lagrangian and Hamiltonian mechanics, as an alternative form of studying the subject Introduces structural indeterminacy and degrees of freedom with large number of worked out examples Covers fundamentals of matrix theory of structural analysis Reviews energy principles and their relationship to calculating structural deflections
Transactions on Engineering Technologies - Sio-Iong Ao 2020-10-24
This book contains a selection of research articles written by prominent researchers participating in The 27th World Congress on Engineering (WCE 2019) which was held in London, UK, July 3-5, 2019. Topics covered include engineering mathematics, electrical engineering, communications systems, computer science, chemical engineering,

systems engineering, manufacturing engineering, and industrial applications. With contributions carefully chosen to represent the most cutting-edge research presented during the conference, the book contains some of the state of the art in engineering technologies and the physical sciences and their applications and serves as a useful reference for researchers and graduate students working in these fields.

Structural Analysis - Devdas Menon
2017-07-30

STRUCTURAL ANALYSIS (Second Edition) is a basic under-graduate text on Structural Analysis, presented with fresh insight and clarity.

FINITE ELEMENT METHOD AND COMPUTATIONAL STRUCTURAL DYNAMICS -
MANISH SHRIKHANDE 2014-06-06

Primarily intended for senior undergraduate and postgraduate students of civil, mechanical and aerospace/aeronautical engineering,

this text emphasises the importance of reliability in engineering computations and understanding the process of computer aided engineering. Written with a view to promote the correct use of finite element technology and to present a detailed study of a set of essential computational tools for the practice of structural dynamics, this book is a ready-reckoner for an in-depth discussion of finite element theory and estimation and control of errors in computations. It is specifically aimed at the audience with interest in vibrations and stress analysis. Several worked out examples and exercise problems have been included to describe the various aspects of finite element theory and modelling. The exercise on error analysis will be extremely helpful in grasping the essence of posteriori error analysis and mesh refinement. KEY FEATURES • Thorough discussion of numerical algorithms for reliable and efficient

computation. • Ready-to-use finite element system and other scientific applications. • Tips for improving the quality of finite element solutions. • Companion DVD containing ready to use finite element applications. AUDIENCE: Senior Undergraduate and Postgraduate students of Civil, Mechanical and Aerospace/Aeronautical engineering
Plant Hazard Analysis and Safety Instrumentation Systems - Swapan Basu
2016-10-21

Plant Hazard Analysis and Safety Instrumentation Systems is the first book to combine coverage of these two integral aspects of running a chemical processing plant. It helps engineers from various disciplines learn how various analysis techniques, international standards, and instrumentation and controls provide layers of protection for basic process control systems, and how, as a result, overall system reliability, availability,

dependability, and maintainability can be increased. This step-by-step guide takes readers through the development of safety instrumented systems, also including discussions on cost impact, basics of statistics, and reliability. Swapan Basu brings more than 35 years of industrial experience to this book, using practical examples to demonstrate concepts. Basu links between the SIS requirements and process hazard analysis in order to complete SIS lifecycle implementation and covers safety analysis and realization in control systems, with up-to-date descriptions of modern concepts, such as SIL, SIS, and Fault Tolerance to name a few. In addition, the book addresses security issues that are particularly important for the programmable systems in modern plants, and discusses, at length, hazardous atmospheres and their impact on electrical enclosures and the use of IS circuits. Helps the

reader identify which hazard analysis method is the most appropriate (covers ALARP, HAZOP, FMEA, LOPA) Provides tactics on how to implement standards, such as IEC 61508/61511 and ANSI/ISA 84 Presents information on how to conduct safety analysis and realization in control systems and safety instrumentation

Big Data Computing - Rajendra Akerkar
2013-12-05

Due to market forces and technological evolution, Big Data computing is developing at an increasing rate. A wide variety of novel approaches and tools have emerged to tackle the challenges of Big Data, creating both more opportunities and more challenges for students and professionals in the field of data computation and analysis. Presenting a mix of industry cases and theory, Big Data Computing discusses the technical and practical issues related to Big Data in intelligent information

management. Emphasizing the adoption and diffusion of Big Data tools and technologies in industry, the book introduces a broad range of Big Data concepts, tools, and techniques. It covers a wide range of research, and provides comparisons between state-of-the-art approaches. Comprised of five sections, the book focuses on: What Big Data is and why it is important Semantic technologies Tools and methods Business and economic perspectives Big Data applications across industries

Neural Information Processing - Teddy Mantoro
2021-12-06

The two-volume set CCIS 1516 and 1517 constitutes thoroughly refereed short papers presented at the 28th International Conference on Neural Information Processing, ICONIP 2021, held in Sanur, Bali, Indonesia, in December 2021.* The volume also presents papers from the workshop on Artificial Intelligence and Cyber Security, held during the ICONIP

2021. The 176 short and workshop papers presented in this volume were carefully reviewed and selected for publication out of 1093 submissions. The papers are organized in topical sections as follows: theory and algorithms; AI and cybersecurity; cognitive neurosciences; human centred computing; advances in deep and shallow machine learning algorithms for biomedical data and imaging; reliable, robust, and secure machine learning algorithms; theory and applications of natural computing paradigms; applications. * The conference was held virtually due to the COVID-19 pandemic.

Systemic Flexibility and Business Agility - Sushil 2014-12-16

This book provides a conceptual framework for systemic flexibility and business agility, drawing on a basis of research/case applications in various types of flexibility and agility in business. The selected papers address a variety of issues

concerning the theme of systemic flexibility and business agility and are organized into following five parts: (i) Systemic and Strategic Flexibility; (ii) Information and Business Agility; (iii) Flexibility, Innovation and Business Excellence; (iv) Flexibility in Value and Supply Chains; and(v) Financial Flexibility and Mergers & Acquisitions. Flexibility and agility in business are emerging as key dimensions of business excellence that encompass the requirements of both choice and speed. The two concepts, flexibility and agility, have been used in multiple ways and often interchangeably, both in literature and in practice. The growing need for flexibility/agility in business can be seen from reactive as well as proactive perspectives. A business enterprise is expected to possess reactive flexibility/ agility (as adaptability and responsiveness) in order to cope with the changing and

uncertain business environment. It may also endeavor to intentionally generate flexibility/agility as a strategic change in a variety of ways, such as leadership change, reengineering, innovation in products and processes, use of information and communication technology, and learning orientation.

eMaintenance - Diego Galar 2017-06-15
eMaintenance: Essential Electronic Tools for Efficiency enables the reader to improve efficiency of operations, maintenance staff, infrastructure managers and system integrators, by accessing a real time computerized system from data to decision. In recent years, the exciting possibilities of eMaintenance have become increasingly recognized as a source of productivity improvement in industry. The seamless linking of systems and equipment to control centres for real time reconfiguring is improving efficiency, reliability, and

sustainability in a variety of settings. The book provides an introduction to collecting and processing data from machinery, explains the methods of overcoming the challenges of data collection and processing, and presents tools for data driven condition monitoring and decision making. This is a groundbreaking handbook for those interested in the possibilities of running a plant as a smart asset. Provides an introduction to collecting and processing data from machinery Explains how to use sensor-based tools to increase efficiency of diagnosis, prognosis, and decision-making in maintenance Describes methods for overcoming the challenges of data collection and processing
Advanced Structural Analysis with MATLAB® - Srinivasan Chandrasekaran 2018-12-07
Building structures are unique in the field of engineering, as they pose challenges in the development and

conceptualization of their design. As more innovative structural forms are envisioned, detailed analyses using computer tools are inevitable. This book enables readers to gain an overall understanding of computer-aided analysis of various types of structural forms using advanced tools such as MATLAB®. Detailed descriptions of the fundamentals are explained in a "classroom" style, which will make the content more user-friendly and easier to understand. Basic concepts are emphasized through simple illustrative examples and exercises, and analysis methodologies and guidelines are explained through numerous example problems.

Problem Solving with Algorithms and Data Structures Using Python -
Bradley N. Miller 2011

This book has three key features :
fundamental data structures and algorithms; algorithm analysis in terms of Big-O running time in

introduced early and applied thought; python is used to facilitates the success in using and mastering data structures and algorithms.

Smart Technologies for Energy, Environment and Sustainable Development, Vol 1 - Mohan Lal Kolhe
2022-02-25

This book contains select proceedings of the International Conference on Smart Technologies for Energy, Environment, and Sustainable Development (ICSTEESD 2020). The book is broadly divided into the themes of energy, environment, and sustainable development; and discusses the significance and solicitations of intelligent technologies in the domain of energy and environmental systems engineering. Topics covered in this book include sustainable energy systems including renewable technologies, energy efficiency, techno-economics of energy system and policies, integrated energy system

planning, environmental management, energy efficient buildings and communities, sustainable transportation, smart manufacturing processes, etc. The book will be a valuable reference for young researchers, professionals, and policy makers working in the areas of energy, environment and sustainable development.

Multimodal Analysis of User-Generated Multimedia Content - Rajiv Shah

2017-08-30

This book presents a summary of the multimodal analysis of user-generated multimedia content (UGC). Several multimedia systems and their proposed frameworks are also discussed. First, improved tag recommendation and ranking systems for social media photos, leveraging both content and contextual information, are presented. Next, we discuss the challenges in determining semantics and sentsics information from UGC to obtain multimedia summaries.

Subsequently, we present a personalized music video generation system for outdoor user-generated videos. Finally, we discuss approaches for multimodal lecture video segmentation techniques. This book also explores the extension of these multimedia system with the use of heterogeneous continuous streams.

Dynamic Analysis and Design of Offshore Structures - Srinivasan Chandrasekaran 2017-10-12

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.

Textiles for Industrial Applications

- R. Senthil Kumar 2016-04-19

An evolution is currently underway in the textile industry and Textile for Industrial Applications is the guidebook for its growth. This industry can be classified into three categories-clothing, home textile, and industrial textile. Industrial textiles, also known as technical textiles, are a part of the industry that is thriving and showing great

Advanced Textile Engineering

Materials - Shahid Ul-Islam

2018-08-21

Advanced Textile Engineering Materials is written to educate readers about the use of advanced materials in various textile applications. In the first part, the book addresses recent advances in chemical finishing, and also highlights environmental issues in textile sectors. In the second part,

the book provides a compilation of innovative fabrication strategies frequently adopted for the mechanical finishing of textiles. The key topics are • Smart textiles • Functional modifications • Protective textiles • Conductive textiles • Coated/laminated textiles • Antimicrobial textiles • Environmental aspects in textiles • Textile materials in composites • 3-D woven preforms for composite reinforcement • Evolution of soft body armor

Advanced Structural Analysis - Devdas Menon 2009

Advanced Structural Analysis is a textbook that essentially covers matrix analysis of structures, presented in a fresh and insightful way. This book is an extension of the author's basic book on Structural Analysis. The initial three chapters review the basic concepts in structural analysis and matrix algebra, and show how the latter

provides an excellent mathematical framework for the former. The next three chapters discuss in detail and demonstrate through many examples how matrix methods can be applied to linear static analysis of skeletal structures (plane and space trusses; beams and grids; plane and space frames) by the stiffness method. Also, it is shown how simple structures can be conveniently solved using a reduced stiffness formulation, involving far less computational effort. The flexibility method is also discussed. Finally, in the seventh chapter, analysis of elastic instability and second-order response is discussed in detail. The main objective is to enable the student to have a good grasp of all the fundamental issues in these advanced topics in Structural Analysis, besides enjoying the learning process, and developing analytical and intuitive skills. With these strong fundamentals, the

student will be well prepared to explore and understand further topics like Finite Elements Analysis.

TEXTBOOK OF FINITE ELEMENT ANALYSIS - P. SESHU 2003-01-01

Designed for a one-semester course in Finite Element Method, this compact and well-organized text presents FEM as a tool to find approximate solutions to differential equations. This provides the student a better perspective on the technique and its wide range of applications. This approach reflects the current trend as the present-day applications range from structures to biomechanics to electromagnetics, unlike in conventional texts that view FEM primarily as an extension of matrix methods of structural analysis. After an introduction and a review of mathematical preliminaries, the book gives a detailed discussion on FEM as a technique for solving differential equations and variational formulation of FEM. This is followed by a lucid

presentation of one-dimensional and two-dimensional finite elements and finite element formulation for dynamics. The book concludes with some case studies that focus on industrial problems and Appendices that include mini-project topics based on near-real-life problems. Postgraduate/Senior undergraduate students of civil, mechanical and aeronautical engineering will find this text extremely useful; it will also appeal to the practising engineers and the teaching community.

Design Aids of Offshore Structures Under Special Environmental Loads including Fire Resistance -

Srinivasan Chandrasekaran 2018-01-12
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.

Computer Methods in Structural Analysis - J.L. Meek 2017-12-14

This book deals with finite element analysis of structures and will be of value to students of civil, structural and mechanical engineering at final year undergraduate and post-graduate level. Practising structural

engineers and researchers will also find it useful. Authoritative and up-to-date, it provides a thorough grounding in matrix-tensor analysis and the underlying theory, and a logical development of its application to structures.

Offshore Structural Engineering - Srinivasan Chandrasekaran 2017-12-19
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.

Elastic Analysis of Soil-Foundation Interaction - A.P.S. Selvadurai
2013-10-22

Developments in Geotechnical Engineering, Vol. 17: Elastic Analysis of Soil-Foundation Interaction focuses on the analysis of the interaction between structural foundations and supporting soil media. The publication first elaborates on soil-foundation interaction problems; idealized soil response models for the analysis of soil-foundation interaction; and

plane-strain analysis of an infinite plate and an infinitely long beam. Discussions focus on three-dimensional effects in the infinite beam problem, elastic models of soil behavior, foundation and interface behavior, and elastic-plastic and time-dependent behavior of soil masses. The manuscript then ponders on the analysis of beams of finite length, axisymmetric three-dimensional problem of an infinite plate, and analysis of finite plates. Concerns cover axisymmetric loading of a circular plate, analysis of rectangular plates, axisymmetric three-dimensional problem of the infinite plate, modifications of the thin plate theory, finite beams on a two-parameter elastic medium, and finite beams on an elastic solid medium. The book tackles the determination of soil parameters, experimental investigations and field studies, as well as experimental investigations and field studies and

measurement and interpretation of parameters encountered in the idealized soil models in relation to soil-foundation behavior. The publication is a valuable reference for researchers interested in the elastic analysis of soil-foundation interaction.

Encyclopedia of Materials

Characterization - Charles A. Evans
1992

"This is a comprehensive volume on analytical techniques used in materials science for the characterization of surfaces, interfaces and thin films. This flagship volume is a unique, stand-alone reference for materials science practitioners, process engineers, students and anyone with a need to know about the capabilities available in materials analysis. An encyclopedia of 50 concise articles, this book will also be a practical companion to the forthcoming books in the series."--Knovel.

Advanced Marine Structures -

Srinivasan Chandrasekaran 2015-08-18
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.

The White Tiger - Aravind Adiga
2008-04-22

SOON TO BE A MAJOR MOTION PICTURE The stunning Booker Prize-winning novel from the author of Amnesty and Selection Day that critics have likened to Richard Wright's Native Son, The White Tiger follows a darkly comic Bangalore driver through the poverty and corruption of modern India's caste society. "This is the authentic voice of the Third World, like you've never heard it before" (John Burdett, Bangkok 8). The white tiger of this novel is Balram Halwai, a poor Indian villager whose great ambition leads him to the zenith of Indian business culture, the world of the Bangalore entrepreneur. On the occasion of the president of China's impending trip to Bangalore, Balram writes a letter to him describing his transformation and his experience as driver and servant to a wealthy

Indian family, which he thinks exemplifies the contradictions and complications of Indian society. Recalling The Death of Vishnu and Bangkok 8 in ambition, scope, The White Tiger is narrative genius with a mischief and personality all its own. Amoral, irreverent, deeply endearing, and utterly contemporary, this novel is an international publishing sensation—and a startling, provocative debut.

Mathematics for Machine Learning - Marc Peter Deisenroth 2020-04-23
The fundamental mathematical tools needed to understand machine learning include linear algebra, analytic geometry, matrix decompositions, vector calculus, optimization, probability and statistics. These topics are traditionally taught in disparate courses, making it hard for data science or computer science

students, or professionals, to efficiently learn the mathematics. This self-contained textbook bridges the gap between mathematical and machine learning texts, introducing the mathematical concepts with a minimum of prerequisites. It uses these concepts to derive four central machine learning methods: linear regression, principal component analysis, Gaussian mixture models and support vector machines. For students and others with a mathematical background, these derivations provide a starting point to machine learning texts. For those learning the mathematics for the first time, the methods help build intuition and practical experience with applying mathematical concepts. Every chapter includes worked examples and exercises to test understanding. Programming tutorials are offered on the book's web site.