

## Structural Analysis 2 Nptel

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 models: 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.

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.

STRUCTURAL ANALYSIS (Second Edition) is a basic undergraduate text on Structural Analysis, presented with fresh insight and clarity. 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 Health Monitoring With Application To Offshore Structures
FINITE ELEMENT METHOD AND COMPUTATIONAL STRUCTURAL DYNAMICS
Design Aids of Offshore Structures Under Special Environmental Loads including Fire Resistance

A Unified Classical and Matrix Approach
An Introduction

*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*

*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.*

*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.*

*The fifth edition of this comprehensive textbook combines and develops concurrently, both classical and matrix-based methods of structural analysis. A new introductory chapter on structural analysis modelling has been added. The suitability of modelling structures as beams, plane or space frames and trusses, plane grids or assemblages of finite elements is discussed in this chapter, along with idealisation of loads, anticipated deformations, sketching deflected shapes, and bending moment diagrams. With new solved examples and problems added, the book now has over 100 worked examples and more than 350 problems with answers. A new companion website contains computer programs that can serve as optional aids in studying and in engineering practice: www.sponpress.com/ckevng/support.htm. Structural Analysis: A Unified Classical and Matrix Approach, translated into six languages, is a textbook of great international renown, and is recommended by many civil and structural engineering lecturers to their students due to its clear and thorough style and content*

Structural Analysis
The Proceedings of the Third International Conference on Smart City Applications
Essential Electronic Tools for Efficiency
eMaintenance

Structure and Properties

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

Cellular solids include engineering honeycombs and foams (which can now be made from polymers, metals, ceramics, and composites) as well as natural materials, such as wood, cork, and cancellous bone. This new edition of a classic work details current understanding of the structure and mechanical behavior of cellular materials, and the ways in which they can be exploited in engineering design. Gibson and Ashby have brought the book completely up to date, including new work on processing of metallic and ceramic foams and on the mechanical, electrical and acoustic properties of cellular solids. Data for commercially available foams are presented on material property charts; two new case studies show how the charts are used for selection of foams in engineering design. Over 150 references appearing in the literature since the publication of the first edition are cited. It will be of interest to graduate students and researchers in materials science and engineering.

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

Engineering of nanophase materials and devices is vital to progress 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 Methods of Structural Analysis

Vibrations and Waves in Continuous Mechanical Systems
Construction, Materials, and Operations

Elasticity for Engineers

Equilibrium Analysis with Mathematical Programming Methods

**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.**

**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) and uses an 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**

**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**

**Discusses 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**
**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.**

Ship Structural Analysis and Design

Multimodal Analysis of User-Generated Multimedia Content

Advanced Structural Analysis with MATLAB®

Handbook on Battery Energy Storage System

Computational Techniques for Process Simulation and Analysis Using MATLAB®

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.

Designed for both undergraduate and postgraduate students of mechanical, aerospace, chemical and metallurgical engineering, this compact and well-knitted textbook provides a sound conceptual basis in fundamentals of combustion processes, highlighting the basic principles of natural laws. In the initial part of the book, chemical thermodynamics, kinetics, and conservation equations are reviewed extensively with a view to preparing students to assimilate quickly intricate aspects of combustion covered in later chapters. Subsequently, the book provides extensive treatments of 'pre-mixed laminar flame', and 'gaseous diffusion flame', emphasizing the practical aspects of these flames. Besides, liquid droplet combustion under quiescent and convective environment is covered in the book. Simplified analysis of spray combustion is carried out which can be used as a design tool. An extensive treatment on the solid fuel combustion is also included. Emission combustion systems, and how to control emission from them using the latest techniques, constitute the subject matter of the final chapter. Appropriate examples are provided throughout to foster better understanding of the concepts discussed. Chapter-end review questions and problems are included to reinforce the learning process of students. This revised and significantly expanded edition contains a rigorous examination of key concepts, new chapters and discussions within existing chapters, and added reference materials in the appendix, while retaining its classroom-tested approach to helping readers navigate through the deep ideas, vast collection of the fundamental methods of structural analysis. The authors show how to undertake the numerous analytical methods used in structural analysis by focusing on the principal concepts, detailed procedures and results, as well as taking into account the advantages and disadvantages of each method and sphere of their effective application. The end result is a guide to mastering the many intricacies of the range of methods of structural analysis. The book differentiates itself by focusing on extended analysis of beams, plane and spatial trusses, frames, arches, cables and combined structures; extensive application of influence lines for analysis of structures; simple and effective procedures for computation of deflections; introduction to plastic analysis, stability, and free and forced vibration analysis, as well as some special topics. Ten years ago, Professor Igor A. Karnovsky and Olga Lebed crafted a must-read book. Now fully updated, expanded, and titled Advanced Methods of Structural Analysis (Strength, Stability, Vibration), the book is ideal for instructors, civil and structural engineers, as well as researches and graduate and post graduate students with an interest in perfecting structural analysis.

Covers the basic principles – and the corresponding accompanying mathematical expressions – involved in the theory of elasticity, along with applications to a large variety of problems in civil engineering. It also includes a comprehensive range of worked examples and problems for students to consolidate their understanding of the fundamental principles and illustrate their application in practical situations.

FUNDAMENTALS OF COMBUSTION

Textiles for Industrial Applications

Characterization of Nanophase Materials

Transactions on Engineering Technologies

Cellular Solids

*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 Engineering*

*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.*

*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.*

*This book highlights the technical insights presented at the third installment of the International Conference on Smart City Applications (SCA2018), held in Tetouan, 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.*

Intermediate Structural Analysis

Ocean Structures

Innovations in Smart Cities Applications Edition 2

Volume 2: Application to Neural Engineering, Robotics, and STEM

Advanced Structural Analysis

For a structure as large ans as complex as a ship there are three levels of structural design, the second and most central of which is the subject of this book. Rationally-based design is design from first principles using the tools of modern engineering science: computer and the methods of structural analysis and optimization which computers have made possible. structural design, and it is this approach and this level of design that is the subject of this book.

This book addresses the concepts of material selection and analysis, choice of structural form, construction methods, environmental loads, health monitoring, and repair methodologies and rehabilitation of ocean structures. It examines various types of ocean and offshore structures, including drilling platforms, processing platforms and vessel 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.

This handbook serves as a guide to deploying battery energy storage technologies, specifically for distributed energy resources and flexibility resources. Battery energy storage technology is the most promising, rapidly developed technology as it provides higher efficiency and ease of control. 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, fluid-structure interaction, 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. 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 conceptualization and design of advanced marine structures.

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 metho– which often differ for each type of structure. The matrix approach also 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 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.

Dynamic Analysis and Design of Offshore Structures
Plates and Shells

Urban Transportation Networks

Matrix Analysis of Structures SI Version

Prediction with Statistics and Machine Learning

**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.**

**This series data analysis is increasingly important due to the massive production of such data through the internet of things, the digitalization of healthcare, and the rise of smart cities. As continuous monitoring and data collection become more common, the need for competent time series analysis with both statistical and machine learning techniques will increase. Covering innovations in time series data analysis and use cases from the real world, this practical guide will help you solve the most common data engineering and analysis challenges time series, using both traditional statistical and modern machine learning techniques. Author Aileen Nielsen offers an accessible, well-rounded introduction to time series in both R and Python that will have data scientists, software engineers, and researchers up and running quickly. You'll get the guidance you need to confidently: Find and wrangle time series data Undertake exploratory time series data analysis Store temporal data Simulate time series data Generate and select features for a time series Measure error Forecast and classify time series with machine or deep learning Evaluate accuracy and performance**

**This volume features the proceedings from the Summer Seminar of the Canadian Mathematical Society held at Universite Laval. The purpose of the seminar was to gather both mathematicians and engineers interested in the theory or application of plates and shells, or more generally, in the modalisation of thin structures. From this, it was hoped that a better understanding of the problem would emerge for both groups of professionals. New aspects from the mathematical point of view and new applications posing new challenges are reported. This volume offers a snapshot of the state of the art of this rapidly evolving topic.**

Advanced Structural Analysis with MATLAB®CRC Press

Advanced Steel Design of Structures

Mathematics for Machine Learning

Practical Time Series Analysis

TEXTBOOK OF FINITE ELEMENT ANALYSIS

Introduction to Structural Analysis

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.

This handbook serves as a guide to deploying battery energy storage technologies, specifically for distributed energy resources and flexibility resources. Battery energy storage technology is the most promising, rapidly developed technology as it provides higher efficiency and ease of control. With energy transition through decarbonization and decentralization, energy storage plays a significant role to enhance grid efficiency by alleviating volatility from demand and supply. Energy storage also contributes to the grid integration of renewable energy and promotion of microgrid.

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.

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.

World Congress on Engineering 2019

Systemic Flexibility and Business Agility

Cognitive Informatics, Computer Modelling, and Cognitive Science
Analysis of Aircraft Structures

**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.**

**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 leading change, reengineering, innovation in products and processes, use of information and communication technology, and learning orientation.**

**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 sentsic 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 this multimedia system with the use of heterogeneous continuous streams.**

Advanced Textile Engineering Materials

Elastic Analysis of Soil-Foundation Interaction

Matrix Analysis Framed Structures

Advanced Marine Structures