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**Structural Analysis Vol II** - R. Vaidyanathan 2004

**Elementary Theory of Structures** - Yuan-yu Hsieh 1970

*Linear Models in Statistics* - Alvin C. Rencher 2008-01-18

The essential introduction to the theory and application of linear models—now in a valuable new edition Since most advanced statistical tools are generalizations of the linear model, it is necessary to first master the linear model in order to move forward to more advanced concepts. The linear model remains the main tool of the applied statistician and is central to the training of any statistician regardless of whether the focus is applied or theoretical. This completely revised and updated new edition successfully develops the basic theory of linear models for regression, analysis of variance, analysis of covariance, and linear mixed models. Recent advances in the methodology related to linear mixed models, generalized linear models, and the Bayesian linear model are also addressed. *Linear Models in Statistics, Second Edition* includes full coverage of advanced topics, such as mixed and generalized linear models, Bayesian linear models, two-way models with empty cells, geometry of least squares, vector-matrix calculus, simultaneous inference, and logistic and nonlinear regression. Algebraic, geometrical, frequentist, and Bayesian approaches to both the inference of linear models and the analysis of variance are also illustrated. Through the expansion of relevant material and the inclusion of the latest technological developments in the field, this book provides readers with the theoretical foundation to correctly interpret computer software output as well as effectively use, customize, and understand linear models. This modern Second Edition features: New chapters on Bayesian linear models as well as random and mixed linear models Expanded discussion of two-way models with empty cells Additional sections on the geometry of least squares Updated coverage of simultaneous inference The book is complemented with easy-to-read proofs, real data sets, and an extensive bibliography. A thorough review of the requisite matrix algebra has been added for transitional purposes, and numerous theoretical and applied problems have been incorporated with selected answers provided at the end of the book. A related Web site includes additional data sets and SAS® code for all numerical examples. *Linear Model in Statistics, Second Edition* is a must-have book for courses in statistics, biostatistics, and mathematics at the upper-undergraduate and graduate levels. It is also an invaluable reference for researchers who need to gain a better understanding of regression and analysis of variance.

*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.

**Chemistry and Biology of Heparin and Heparan Sulfate** - Hari G. Garg 2011-10-10

The chemistry, biochemistry and pharmacology of heparin and heparan sulfate have been and continue to be a major scientific undertaking - heparin and its derivative remain important drugs in clinical practice. Chemistry and Biology of Heparin and Heparan Sulfate provides readers with an insight into the chemistry, biology and clinical applications of heparin and heparan sulfate and examines their function in various physiological and pathological conditions. Providing a wealth of useful information, no other tome covers the diversity of topics in the field. Students, doctors, chemists, biochemists, and research scientists will find this book an invaluable source for updating their current knowledge of developments in this area. Comprehensively reviews all aspects of heparin and heparan sulfate research Uniquely describes the chemistry, biology and clinical application of heparins and heparan sulfates in one work Provides an invaluable source of knowledge of current developments for chemists, biochemists, medical doctors, researchers, students and practitioners

**Design of Reinforced Concrete** - Jack C. McCormac 2005

Publisher Description

**Introduction to Real Analysis** - William F. Trench 2003

Using an extremely clear and informal approach, this book introduces readers to a rigorous understanding of mathematical analysis and presents challenging math concepts as clearly as possible. The real number system. Differential calculus of functions of one variable. Riemann integral functions of one variable. Integral calculus of real-valued functions. Metric Spaces. For those who want to gain an understanding of mathematical analysis and challenging mathematical concepts.

**Practical Statistics for Data Scientists** - Peter Bruce 2017-05-10

Statistical methods are a key part of data science, yet very few data scientists have any formal statistics training. Courses and books on basic statistics rarely cover the topic from a data science perspective. This practical guide explains how to apply various statistical methods to data science, tells you how to avoid their misuse, and gives you advice on what's important and what's not. Many data science resources incorporate statistical methods but lack a deeper statistical perspective. If you're familiar with the R programming language, and have some exposure to statistics, this quick reference bridges the gap in an accessible, readable format. With this book, you'll learn: Why exploratory data analysis is a key preliminary step in data science How random sampling can reduce bias and yield a higher quality dataset, even with big data How the principles of experimental design yield definitive answers to questions How to use regression to estimate outcomes and detect anomalies Key classification techniques for predicting which categories a record belongs to Statistical

machine learning methods that “learn” from data Unsupervised learning methods for extracting meaning from unlabeled data

*Introductory Structural Analysis* - Chu-Kia Wang 1984

**Indeterminate Structural Analysis** - Kenneth N. Derucher 2013-05-03

This textbook covers the analysis of indeterminate structures by force method, displacement method and stiffness method in a total of six chapters which can be covered in a single course on indeterminate structural analysis. It includes an as-needed discussion of the unit load method, which is arguably the best method to calculate deflections when solving problems by the force method.

**Intermediate Structural Analysis** - Chu-Kia Wang 1983

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.

*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.

**March's Advanced Organic Chemistry** - Michael B. Smith 2007-01-29

The Sixth Edition of a classic in organic chemistry continues its tradition of excellence. Now in its sixth edition, March's Advanced Organic Chemistry remains the gold standard in organic chemistry. Throughout its six editions, students and chemists from around the world have relied on it as an essential resource for planning and executing synthetic reactions. The Sixth Edition brings the text completely current with the most recent organic reactions. In addition,

the references have been updated to enable readers to find the latest primary and review literature with ease. New features include: More than 25,000 references to the literature to facilitate further research Revised mechanisms, where required, that explain concepts in clear modern terms Revisions and updates to each chapter to bring them all fully up to date with the latest reactions and discoveries A revised Appendix B to facilitate correlating chapter sections with synthetic transformations

**International Perspectives on Teacher Knowledge, Beliefs and Opportunities to Learn** - Sigrid Blömeke 2013-09-09

This book reviews the Teacher Education and Development Study: Learning to Teach Mathematics, which tested 23,000 primary and secondary level math teachers from 16 countries on content knowledge and asked their opinions on beliefs and opportunities to learn.

*Functional Analysis, Sobolev Spaces and Partial Differential Equations* - Haim Brezis 2010-11-02

This textbook is a completely revised, updated, and expanded English edition of the important Analyse fonctionnelle (1983). In addition, it contains a wealth of problems and exercises (with solutions) to guide the reader. Uniquely, this book presents in a coherent, concise and unified way the main results from functional analysis together with the main results from the theory of partial differential equations (PDEs). Although there are many books on functional analysis and many on PDEs, this is the first to cover both of these closely connected topics. Since the French book was first published, it has been translated into Spanish, Italian, Japanese, Korean, Romanian, Greek and Chinese. The English edition makes a welcome addition to this list.

**A Beginner's Guide to Structural Equation Modeling** - Randall E. Schumacker 2004-06-24

The second edition features: a CD with all of the book's Amos, EQS, and LISREL programs and data sets; new chapters on importing data issues related to data editing and on how to report research; an updated introduction to matrix notation and programs that illustrate how to compute these calculations; many more computer program examples and chapter exercises; and increased coverage of factors that affect correlation, the 4-step approach to SEM and hypothesis testing, significance, power, and sample size issues. The new edition's expanded use of applications make this book ideal for advanced students and researchers in psychology, education, business, health care, political science, sociology, and biology. A basic understanding of correlation is assumed and an understanding of the matrices used in SEM models is encouraged.

*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.

Enzymes - Robert A. Copeland 2004-04-07

Fully updated and expanded-a solid foundation for understanding experimental enzymology. This practical, up-to-date survey is designed for a broad spectrum of biological and chemical scientists who are beginning to delve into modern enzymology. Enzymes, Second Edition explains the structural complexities of proteins and enzymes and the mechanisms by which enzymes perform their catalytic functions. The book provides illustrative examples from the contemporary literature to guide the reader through concepts and data analysis procedures. Clear, well-written descriptions simplify the complex mathematical treatment of enzyme kinetic data, and numerous citations at the end of each chapter enable the reader to access the primary literature and more in-depth treatments of specific topics. This Second Edition of Enzymes: A Practical Introduction to Structure, Mechanism, and Data Analysis features refined and expanded coverage of many concepts, while retaining the introductory nature of the book. Important new features include: A new chapter on protein-ligand binding equilibria

Expanded coverage of chemical mechanisms in enzyme catalysis and experimental measurements of enzyme activity Updated and refined discussions of enzyme inhibitors and multiple substrate reactions Coverage of current practical applications to the study of enzymology Supplemented with appendices providing contact information for suppliers of reagents and equipment for enzyme studies, as well as a survey of useful Internet sites and computer software for enzymatic data analysis, *Enzymes, Second Edition* is the ultimate practical guide for scientists and students in biochemical, pharmaceutical, biotechnical, medicinal, and agricultural/food-related research.

**Causal Inference** - Miquel A. Hernan 2019-07-07

The application of causal inference methods is growing exponentially in fields that deal with observational data. Written by pioneers in the field, this practical book presents an authoritative yet accessible overview of the methods and applications of causal inference. With a wide range of detailed, worked examples using real epidemiologic data as well as software for replicating the analyses, the text provides a thorough introduction to the basics of the theory for non-time-varying treatments and the generalization to complex longitudinal data.

*Theory of Structures* - RS Khurmi | N Khurmi 2000-11

I feel elevated in presenting the New edition of this standard treatise. The favourable reception, which the previous edition and reprints of this book have enjoyed, is a matter of great satisfaction for me. I wish to express my sincere thanks to numerous professors and students for their valuable suggestions and recommending the patronise this standard treatise in the future also.

**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.

*Environmental Nanotechnology* - M. H. Fulekar 2017-10-30

Environmental nanotechnology is considered to play a key role in shaping of current environmental engineering and science practices. This book titled "Environmental Nanotechnology" covers the advanced materials, devices, and system development for use in the environmental protection. The development of nano-based materials, understanding their chemistry and characterization using techniques like X-Ray diffraction, FT-IR, EDX, scanning electron microscope (SEM), transmission electron microscope (TEM), high resolution-TEM, etc is included. It also highlights the scope for their applications in environmental protection, environmental remediation and environmental biosensors for detection, monitoring and assessment. Key Features: Covers basic to advanced Nano-based materials, their synthesis, development, characterization and applications and all the updated information related to environmental nanotechnology. Discusses implications of nanomaterials on the environment and applications of nanotechnology to protect the environment. Illustrates specific topics such as ethics of nanotechnology development, Nano-biotechnology, and application in wastewater technology. Includes applications of nanomaterials for combating global climate change and carbon sequestration. Gives examples of field applications of environmental nanotechnology. This book covers advanced materials, devices, and system developments for use in environmental protection. The development of nano-based materials, understanding its

chemistry and characterization by the use of X-Ray diffraction, FT-IR, EDX, scanning electron microscope (SEM), transmission electron microscope (TEM), and high resolution-TEM give the scope for their application in environmental protection, environmental remediation, and environmental biosensors for detection, monitoring, and assessment. The green chemistry based on nano-based materials prevents pollution and controls environmental contaminants.

Spectral Methods - Jie Shen 2011-08-25

Along with finite differences and finite elements, spectral methods are one of the three main methodologies for solving partial differential equations on computers. This book provides a detailed presentation of basic spectral algorithms, as well as a systematical presentation of basic convergence theory and error analysis for spectral methods. Readers of this book will be exposed to a unified framework for designing and analyzing spectral algorithms for a variety of problems, including in particular high-order differential equations and problems in unbounded domains. The book contains a large number of figures which are designed to illustrate various concepts stressed in the book. A set of basic matlab codes has been made available online to help the readers to develop their own spectral codes for their specific applications.

**Design of Steel Structures** - Elias G. Abu-Saba 2012-12-06

This book is intended for classroom teaching in architectural and civil engineering at the graduate and undergraduate levels. Although it has been developed from lecture notes given in structural steel design, it can be useful to practicing engineers. Many of the examples presented in this book are drawn from the field of design of structures. Design of Steel Structures can be used for one or two semesters of three hours each on the undergraduate level. For a two-semester curriculum, Chapters 1 through 8 can be used during the first semester. Heavy emphasis should be placed on Chapters 1 through 5, giving the student a brief exposure to the consideration of wind and earthquakes in the design of buildings. With the new federal requirements vis a vis wind and earthquake hazards, it is beneficial to the student to have some understanding of the underlying concepts in this field. In addition to the class lectures, the instructor should require the student to submit a term project that includes the complete structural design of a multi-story building using standard design procedures as specified by AISC Specifications. Thus, the use of the AISC Steel Construction Manual is a must in teaching this course. In the second semester, Chapters 9 through 13 should be covered. At the undergraduate level, Chapters 11 through 13 should be used on a limited basis, leaving the student more time to concentrate on composite construction and built-up girders.

**Software Testing and Quality Assurance** - Kshirasagar Naik 2011-09-23

A superior primer on software testing and quality assurance, from integration to execution and automation This important new work fills the pressing need for a user-friendly text that aims to provide software engineers, software quality professionals, software developers, and students with the fundamental developments in testing theory and common testing practices. Software Testing and Quality Assurance: Theory and Practice equips readers with a solid understanding of: Practices that support the production of quality software Software testing techniques Life-cycle models for requirements, defects, test cases, and test results Process models for units, integration, system, and acceptance testing How to build test teams, including recruiting and retaining test engineers Quality Models, Capability Maturity Model, Testing Maturity Model, and Test Process Improvement Model Expertly balancing theory with practice, and complemented with an abundance of pedagogical tools, including test questions, examples, teaching suggestions, and chapter summaries, this book is a valuable, self-contained tool for professionals and an ideal introductory text for courses in software testing, quality assurance, and software engineering.

**Data Structure Practice** - Yonghui Wu 2016-02-22

Combining knowledge with strategies, *Data Structure Practice for Collegiate Programming Contests and Education* presents the first comprehensive book on data structure in programming contests. This book is designed for training collegiate programming contest teams in the nuances of data structure and for helping college students in computer-related *Indeterminate Structural Analysis* - K. U. Muthu 2014-02-28

Explains the basics of indeterminate structural analysis. It been designed to cater to the needs of the undergraduate students and design engineers. The classical methods - slope deflection, moment distribution and Kani's method - are explained at the outset to form the basis of analysis.

**OpenIntro Statistics** - David Diez 2015-07-02

The OpenIntro project was founded in 2009 to improve the quality and availability of education by producing exceptional books and teaching tools that are free to use and easy to modify. We feature real data whenever possible, and files for the entire textbook are freely available at [openintro.org](http://openintro.org). Visit our website, [openintro.org](http://openintro.org). We provide free videos, statistical software labs, lecture slides, course management tools, and many other helpful resources.

*Matrix Methods of Structural Analysis* - Chu-Kia Wang 1970

**Data Mining: Concepts and Techniques** - Jiawei Han 2011-06-09

Data Mining: Concepts and Techniques provides the concepts and techniques in processing gathered data or information, which will be used in various applications. Specifically, it explains data mining and the tools used in discovering knowledge from the collected data. This book is referred as the knowledge discovery from data (KDD). It focuses on the feasibility, usefulness, effectiveness, and scalability of techniques of large data sets. After describing data mining, this edition explains the methods of knowing, preprocessing, processing, and warehousing data. It then presents information about data warehouses, online analytical processing (OLAP), and data cube technology. Then, the methods involved in mining frequent patterns, associations, and correlations for large data sets are described. The book details the methods for data classification and introduces the concepts and methods for data clustering. The remaining chapters discuss the outlier detection and the trends, applications, and research frontiers in data mining. This book is intended for Computer Science students, application developers, business professionals, and researchers who seek information on data mining. Presents dozens of algorithms and implementation examples, all in pseudo-code and suitable for use in real-world, large-scale data mining projects Addresses advanced topics such as mining object-relational databases, spatial databases, multimedia databases, time-series databases, text databases, the World Wide Web, and applications in several fields Provides a comprehensive, practical look at the concepts and techniques you need to get the most out of your data

*Reinforced Concrete Design* - Chu-Kia Wang 1998-01-15

The sixth edition of this comprehensive textbook provides the same philosophical approach that has gained wide acceptance since the first edition was published in 1965. The strength and behavior of concrete elements are treated with the primary objective of explaining and justifying the rules and formulas of the ACI Building Code. The treatment is incorporated into the chapters in such a way that the reader may study the concepts in a logical sequence in detail or merely accept a qualitative explanation and proceed directly to the design process using the ACI Code.

**Density Functional Theory** - David Sholl 2011-09-20

Demonstrates how anyone in math, science, and engineering can master DFT calculations Density functional theory (DFT) is one of the most frequently used computational tools for

studying and predicting the properties of isolated molecules, bulk solids, and material interfaces, including surfaces. Although the theoretical underpinnings of DFT are quite complicated, this book demonstrates that the basic concepts underlying the calculations are simple enough to be understood by anyone with a background in chemistry, physics, engineering, or mathematics. The authors show how the widespread availability of powerful DFT codes makes it possible for students and researchers to apply this important computational technique to a broad range of fundamental and applied problems. Density Functional Theory: A Practical Introduction offers a concise, easy-to-follow introduction to the key concepts and practical applications of DFT, focusing on plane-wave DFT. The authors have many years of experience introducing DFT to students from a variety of backgrounds. The book therefore offers several features that have proven to be helpful in enabling students to master the subject, including: Problem sets in each chapter that give readers the opportunity to test their knowledge by performing their own calculations Worked examples that demonstrate how DFT calculations are used to solve real-world problems Further readings listed in each chapter enabling readers to investigate specific topics in greater depth This text is written at a level suitable for individuals from a variety of scientific, mathematical, and engineering backgrounds. No previous experience working with DFT calculations is needed.

**On My Own** - Xueli Wang 2020-04-21

*On My Own: The Challenge and Promise of Building Equitable STEM Transfer Pathways* is the first book of its kind to provide a detailed, on-the-ground examination of the difficult paths--curricular, interpersonal, and institutional--that students must chart through community college. The book follows 1,670 two-year college students over four years as they begin STEM programs in the Midwest and documents their educational and life experiences as they moved toward, or away, from the prospect of transfer to a four-year institution. Their stories reveal that they were on their own, left to navigate the pathways to transfer without meaningful institutional support. The students pursued one of four pathways, or momentum trajectories: linear upward, detoured, deferred, or taking a break. The preexisting and lasting disparities in their access to education and financial resources, their experiences with teaching and advising, and the conundrum between support from and for family, among others, propelled them onto different trajectories in their quest for transfer. As this book makes painfully clear, the current state of transfer acts as a mechanism that perpetuates and worsens inequities in educational outcomes. As Xueli Wang argues, to cultivate an equitable STEM transfer pathway, culturally relevant and responsive supports that are accessible, welcoming, and validating must be put in place at the institutional level and appeal to the talent, motivation, and unique needs of historically marginalized students. In doing so, two-year colleges will be better positioned to fulfill their promise as an equitable pathway to bachelor's degrees and beyond.

*Advanced Methods of Structural Analysis* - Igor A. Karnovsky 2021-03-16

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 researchers and graduate and post graduate students with an interest in perfecting structural analysis.

**Imbalanced Learning** - Haibo He 2013-06-07

The first book of its kind to review the current status and future direction of the exciting new branch of machine learning/data mining called imbalanced learning. Imbalanced learning focuses on how an intelligent system can learn when it is provided with imbalanced data. Solving imbalanced learning problems is critical in numerous data-intensive networked systems, including surveillance, security, Internet, finance, biomedical, defense, and more. Due to the inherent complex characteristics of imbalanced data sets, learning from such data requires new understandings, principles, algorithms, and tools to transform vast amounts of raw data efficiently into information and knowledge representation. The first comprehensive look at this new branch of machine learning, this book offers a critical review of the problem of imbalanced learning, covering the state of the art in techniques, principles, and real-world applications. Featuring contributions from experts in both academia and industry, *Imbalanced Learning: Foundations, Algorithms, and Applications* provides chapter coverage on: Foundations of Imbalanced Learning Imbalanced Datasets: From Sampling to Classifiers Ensemble Methods for Class Imbalance Learning Class Imbalance Learning Methods for Support Vector Machines Class Imbalance and Active Learning Nonstationary Stream Data Learning with Imbalanced Class Distribution Assessment Metrics for Imbalanced Learning Imbalanced Learning: Foundations, Algorithms, and Applications will help scientists and engineers learn how to tackle the problem of learning from imbalanced datasets, and gain insight into current developments in the field as well as future research directions.

**A Practical Course in Advanced Structural Design** - Tim Huff 2021-04-01

*A Practical Course in Advanced Structural Design* is written from the perspective of a practicing engineer, one with over 35 years of experience, now working in the academic world, who wishes to pass on lessons learned over the course of a structural engineering career. The book covers essential topics that will enable beginning structural engineers to gain an advanced understanding prior to entering the workforce, as well as topics which may receive little or no attention in a typical undergraduate curriculum. For example, many new structural engineers are faced with issues regarding estimating collapse loadings during earthquakes and establishing fatigue requirements for cyclic loading – but are typically not taught the underlying methodologies for a full understanding. Features: Advanced practice-oriented guidance on structural building and bridge design in a single volume. Detailed treatment of earthquake ground motion from multiple specifications (ASCE 7-16, ASCE 4-16, ASCE 43-05, AASHTO). Details of calculations for the advanced student as well as the practicing structural engineer. Practical example problems and numerous photographs from the author's projects throughout. *A Practical Course in Advanced Structural Design* will serve as a useful text for graduate and upper-level undergraduate civil engineering students as well as practicing structural engineers.

**High-Dimensional Probability** - Roman Vershynin 2018-09-30

*High-dimensional probability* offers insight into the behavior of random vectors, random matrices, random subspaces, and objects used to quantify uncertainty in high dimensions. Drawing on ideas from probability, analysis, and geometry, it lends itself to applications in mathematics, statistics, theoretical computer science, signal processing, optimization, and

more. It is the first to integrate theory, key tools, and modern applications of high-dimensional probability. Concentration inequalities form the core, and it covers both classical results such as Hoeffding's and Chernoff's inequalities and modern developments such as the matrix Bernstein's inequality. It then introduces the powerful methods based on stochastic processes, including such tools as Slepian's, Sudakov's, and Dudley's inequalities, as well as generic chaining and bounds based on VC dimension. A broad range of illustrations is embedded throughout, including classical and modern results for covariance estimation, clustering, networks, semidefinite programming, coding, dimension reduction, matrix completion, machine learning, compressed sensing, and sparse regression.

**Principal Component Analysis** - I.T. Jolliffe 2013-03-09

Principal component analysis is probably the oldest and best known of the It was first introduced by Pearson (1901), techniques of multivariate analysis. and developed independently by Hotelling (1933). Like many multivariate methods, it was not widely used until the advent of electronic computers, but it is now well entrenched in virtually every statistical computer package. The central idea of principal component analysis is to reduce the dimensionality of a data set in which there are a large number of interrelated variables, while retaining as much as possible of the variation present in the data set. This reduction is achieved by transforming to a new set of variables, the principal components, which are uncorrelated, and which are ordered so that the first few retain most of the variation present in all of the original variables. Computation of the principal components reduces to the solution of an eigenvalue-eigenvector problem for a positive-semidefinite symmetric matrix. Thus, the definition and computation of principal components are straightforward but, as will be seen, this apparently simple technique has a wide variety of different applications, as well as a number of different derivations. Any feelings that principal component analysis is a narrow subject should soon be dispelled by the present book; indeed some quite broad topics which are related to principal component analysis receive no more than a brief mention in the final two chapters.

**Structural Analysis, SI Edition** - Aslam Kassimali 2014-08-01

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