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Air Pollution and Control - Nikhil Sharma 2017-12-13
This book focuses on various aspects related to air pollution, including major sources of air pollution, measurement techniques, modeling studies and solution approaches to control. The book also presents case studies on measuring air pollution in major urban areas, such as Delhi, India. The book examines vehicles as a source of air pollution and addresses the quantitative analysis of engine exhaust emissions. Subsequent chapters discuss particulate matter from engines and coal-fired power plants as a major pollutant, as well as emission control techniques using various after treatment systems. The book's final chapter considers future perspectives and a way forward for sustainable development. It also discusses several emission control techniques that will gain relevance in the future, when stricter emission norms will be enforced for international combustion (IC) engines as well as power plants. Given its breadth of coverage, the book will benefit a wide variety of readers, including researchers, professionals, and policymakers.
Engineering Synthetic Metabolons: From Metabolic Modelling to Rational Design of Biosynthetic Devices - Lars M. Voll 2016-07-19
The discipline of Synthetic Biology has recently emerged at the interface of biology and engineering. The definition of Synthetic Biology has been dynamic over time ever since, which exemplifies that the field is rapidly moving and comprises a broad range of research areas. In the frame of this Research Topic, we focus on Synthetic Biology approaches that aim at rearranging biological parts/ entities in order to generate novel biochemical functions with inherent metabolic activity. This Research Topic encompasses Pathway Engineering in living systems as well as the in vitro assembly of biomolecules into nano- and microscale bioreactors. Both, the engineering of metabolic pathways in vivo, as well as the conceptualization of bioreactors in vitro, require rational design of assembled synthetic pathways and depend on careful selection of individual biological functions and their optimization. Mathematical modelling has proven to be a powerful tool in predicting metabolic flux in living and artificial systems, although modelling approaches have to cope with a limitation in experimentally verified, reliable input variables. This Research Topic puts special emphasis on the vital role of modelling approaches for Synthetic Biology, i.e. the predictive power of mathematical simulations for (i) the manipulation of existing pathways and (ii) the establishment of novel pathways in vivo as well as (iii) the translation of model predictions into the design of synthetic assemblies.
Theories in Educational Psychology - Alyssa R. Gonzalez-DeHass 2013
Theories in Educational Psychology's purpose is to introduce readers to the pioneering educational psychology theories that continue to shape our understanding of the classroom learning environment, present support for the theories from perspectives in the current research literature, and share how these theoretical traditions have translated into

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effective teaching methods. Each chapter will be infused with practical teaching examples, classroom vignettes, and instructional strategies so readers are continually confronted with how theory translates to practice. In addition to becoming familiar with the conceptual understanding of core theoretical knowledge, readers will also be presented with current thinking about each theory and an introduction to important related topics at the close of each chapter. The chapters will also conclude with activities designed to help readers reflect on their learning of each chapter's content.

Numerical Mathematics and Advanced Applications - ENUMATH 2013 - Assyr Abdulle 2014-11-25

This book gathers a selection of invited and contributed lectures from the European Conference on Numerical Mathematics and Advanced Applications (ENUMATH) held in Lausanne, Switzerland, August 26-30, 2013. It provides an overview of recent developments in numerical analysis, computational mathematics and applications from leading experts in the field. New results on finite element methods, multiscale methods, numerical linear algebra and discretization techniques for fluid mechanics and optics are presented. As such, the book offers a valuable resource for a wide range of readers looking for a state-of-the-art overview of advanced techniques, algorithms and results in numerical mathematics and scientific computing.

Calculus for Business, Economics, and the Social and Life Sciences - Laurence D. Hoffmann 2007-06-01

Calculus for Business, Economics, and the Social and Life Sciences introduces calculus in real-world contexts and provides a sound, intuitive understanding of the basic concepts students need as they pursue careers in business, the life sciences, and the social sciences. The new Ninth Edition builds on the straightforward writing style, practical applications from a variety of disciplines, clear step-by-step problem solving techniques, and comprehensive exercise sets that have been hallmarks of Hoffmann/Bradley's success through the years.

MATH for Liberal Arts - Karl J. Smith 2010-01-01

Created through a student-tested, faculty-approved review process, involving over 120 students and faculty members, MATH is an engaging and accessible solution that accommodates the busy lifestyles of today's learners at a value-based price. This paperback text offers a full suite of learning aids, including end-of-chapter review cards, downloadable flashcards and practice problems, online video tutorials, solutions to exercises and practice quizzes aimed at supplementing learning outside of the classroom. MATH presents concepts in a visual and approachable way, ideal for combating the math anxiety often found in Liberal Arts Math students. Also available is Cengage Learning's Enhanced WebAssign—a complete online homework management system for students and professors. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Math in Our World - Dave Sobecki 2019

Proceeded by Math in our world / Dave Sobecki, Associate Professor, Miami University, Hamilton, Allan G. Bluman, Professor Emeritus, Community College of Allegheny County

Rapid Android Development - Daniel Sauter 2013

Create mobile apps for Android phones and tablets using Processing, the free graphics-savvy language and development environment.

Undergraduate Research Experiences for STEM Students - National Academies of Sciences, Engineering, and Medicine 2017-05-19

Undergraduate research has a rich history, and many practicing researchers point to undergraduate research experiences (UREs) as crucial to their own career success. There are many ongoing efforts to improve undergraduate science, technology, engineering, and mathematics (STEM) education that focus on increasing the active engagement of students and decreasing traditional lecture-based teaching, and UREs have been proposed as a solution to these efforts and may be a key strategy for broadening participation in STEM. In light of the proposals questions have been asked about what is known about student participation in UREs, best practices in UREs design, and evidence of beneficial outcomes from UREs. Undergraduate Research Experiences for STEM Students provides a comprehensive overview of

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and insights about the current and rapidly evolving types of UREs, in an effort to improve understanding of the complexity of UREs in terms of their content, their surrounding context, the diversity of the student participants, and the opportunities for learning provided by a research experience. This study analyzes UREs by considering them as part of a learning system that is shaped by forces related to national policy, institutional leadership, and departmental culture, as well as by the interactions among faculty, other mentors, and students. The report provides a set of questions to be considered by those implementing UREs as well as an agenda for future research that can help answer questions about how UREs work and which aspects of the experiences are most powerful.

Problem-Solving Through Problems - Loren C. Larson 2012-12-06

This is a practical anthology of some of the best elementary problems in different branches of mathematics. Arranged by subject, the problems highlight the most common problem-solving techniques encountered in undergraduate mathematics. This book teaches the important principles and broad strategies for coping with the experience of solving problems. It has been found very helpful for students preparing for the Putnam exam.

Changing the Conversation - National Academy of Engineering 2008-06-10

Can the United States continue to lead the world in innovation? The answer may hinge in part on how well the public understands engineering, a key component of the 'innovation engine'. A related concern is how to encourage young people--particularly girls and under-represented minorities--to consider engineering as a career option. Changing the Conversation provides actionable strategies and market-tested messages for presenting a richer, more positive image of engineering. This book presents and discusses in detail market research about what the public finds most appealing about engineering--as well as what turns the public off. Changing the Conversation is a vital tool for improving the public image of engineering and outreach efforts related to engineering. It will be used by engineers in professional and academic settings including informal learning environments (such as museums and science centers), engineering schools, national engineering societies, technology-based corporations that support education and other outreach to schools and communities, and federal and state agencies and labs that do or promote engineering, technology, and science.

Algebraic and Combinatorial Computational Biology - Raina Robeva 2018-10-08

Algebraic and Combinatorial Computational Biology introduces students and researchers to a panorama of powerful and current methods for mathematical problem-solving in modern computational biology. Presented in a modular format, each topic introduces the biological foundations of the field, covers specialized mathematical theory, and concludes by highlighting connections with ongoing research, particularly open questions. The work addresses problems from gene regulation, neuroscience, phylogenetics, molecular networks, assembly and folding of biomolecular structures, and the use of clustering methods in biology. A number of these chapters are surveys of new topics that have not been previously compiled into one unified source. These topics were selected because they highlight the use of technique from algebra and combinatorics that are becoming mainstream in the life sciences. Integrates a comprehensive selection of tools from computational biology into educational or research programs Emphasizes practical problem-solving through multiple exercises, projects and spinoff computational simulations Contains scalable material for use in undergraduate and graduate-level classes and research projects Introduces the reader to freely-available professional software Supported by illustrative datasets and adaptable computer code

University Curricula in the Marine Sciences and Related Fields - 1965

Trends in PDE Constrained Optimization - Günter Leugering 2014-12-22

Optimization problems subject to constraints governed by partial differential equations (PDEs) are among the most challenging problems in the context of industrial, economical and medical applications. Almost the entire range of problems in this field of research was studied and

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further explored as part of the Deutsche Forschungsgemeinschaft (DFG) priority program 1253 on “Optimization with Partial Differential Equations” from 2006 to 2013. The investigations were motivated by the fascinating potential applications and challenging mathematical problems that arise in the field of PDE constrained optimization. New analytic and algorithmic paradigms have been developed, implemented and validated in the context of real-world applications. In this special volume, contributions from more than fifteen German universities combine the results of this interdisciplinary program with a focus on applied mathematics. The book is divided into five sections on “Constrained Optimization, Identification and Control”, “Shape and Topology Optimization”, “Adaptivity and Model Reduction”, “Discretization: Concepts and Analysis” and “Applications”. Peer-reviewed research articles present the most recent results in the field of PDE constrained optimization and control problems. Informative survey articles give an overview of topics that set sustainable trends for future research. This makes this special volume interesting not only for mathematicians, but also for engineers and for natural and medical scientists working on processes that can be modeled by PDEs.

The Mathematical Theory of Communication - Claude E Shannon 1998-09-01

Scientific knowledge grows at a phenomenal pace--but few books have had as lasting an impact or played as important a role in our modern world as The Mathematical Theory of Communication, published originally as a paper on communication theory more than fifty years ago. Republished in book form shortly thereafter, it has since gone through four hardcover and sixteen paperback printings. It is a revolutionary work, astounding in its foresight and contemporaneity. The University of Illinois Press is pleased and honored to issue this commemorative reprinting of a classic.

Recent Advances in Robust Statistics: Theory and Applications - Claudio Agostinelli 2016-11-10

This book offers a collection of recent contributions and emerging ideas in the areas of robust statistics presented at the International Conference on Robust Statistics 2015 (ICORS 2015) held in Kolkata during 12–16 January, 2015. The book explores the applicability of robust methods in other non-traditional areas which includes the use of new techniques such as skew and mixture of skew distributions, scaled Bregman divergences, and multilevel functional data methods; application areas being circular data models and prediction of mortality and life expectancy. The contributions are of both theoretical as well as applied in nature. Robust statistics is a relatively young branch of statistical sciences that is rapidly emerging as the bedrock of statistical analysis in the 21st century due to its flexible nature and wide scope. Robust statistics supports the application of parametric and other inference techniques over a broader domain than the strictly interpreted model scenarios employed in classical statistical methods. The aim of the ICORS conference, which is being organized annually since 2001, is to bring together researchers interested in robust statistics, data analysis and related areas. The conference is meant for theoretical and applied statisticians, data analysts from other fields, leading experts, junior researchers and graduate students. The ICORS meetings offer a forum for discussing recent advances and emerging ideas in statistics with a focus on robustness, and encourage informal contacts and discussions among all the participants. They also play an important role in maintaining a cohesive group of international researchers interested in robust statistics and related topics, whose interactions transcend the meetings and endure year round.

Function Spaces and Applications - Michael Cwikel 2006-11-15

This seminar is a loose continuation of two previous conferences held in Lund (1982, 1983), mainly devoted to interpolation spaces, which resulted in the publication of the Lecture Notes in Mathematics Vol. 1070. This explains the bias towards that subject. The idea this time was, however, to bring together mathematicians also from other related areas of analysis. To emphasize the historical roots of the subject, the collection is preceded by a lecture on the life of Marcel Riesz.

An Introduction to Dynamical Systems and Chaos - G.C. Layek 2015-12-01

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The book discusses continuous and discrete systems in systematic and sequential approaches for all aspects of nonlinear dynamics. The unique feature of the book is its mathematical theories on flow bifurcations, oscillatory solutions, symmetry analysis of nonlinear systems and chaos theory. The logically structured content and sequential orientation provide readers with a global overview of the topic. A systematic mathematical approach has been adopted, and a number of examples worked out in detail and exercises have been included. Chapters 1–8 are devoted to continuous systems, beginning with one-dimensional flows. Symmetry is an inherent character of nonlinear systems, and the Lie invariance principle and its algorithm for finding symmetries of a system are discussed in Chap. 8. Chapters 9–13 focus on discrete systems, chaos and fractals. Conjugacy relationship among maps and its properties are described with proofs. Chaos theory and its connection with fractals, Hamiltonian flows and symmetries of nonlinear systems are among the main focuses of this book. Over the past few decades, there has been an unprecedented interest and advances in nonlinear systems, chaos theory and fractals, which is reflected in undergraduate and postgraduate curricula around the world. The book is useful for courses in dynamical systems and chaos, nonlinear dynamics, etc., for advanced undergraduate and postgraduate students in mathematics, physics and engineering.

Peterson's Graduate and Professional Programs - Peterson's 2007-12

The six volumes of Peterson's Annual Guides to Graduate Study, the only annually updated reference work of its kind, provide wide-ranging information on the graduate and professional programs offered by accredited colleges and universities in the United States and U.S. territories and those in Canada, Mexico, Europe, and Africa that are accredited by U.S. accrediting bodies. Books 2 through 6 are divided into sections that contain one or more directories devoted to individual programs in a particular field. Book 1 includes institutional profiles indicating the degrees offered, enrollment figures, admission and degree requirements, tuition, financial aid, housing, faculty, research projects and facilities, and contacts at more than 2,000 institutions.

Systems Biology of Tumor Microenvironment - Katarzyna A. Rejniak 2016-10-13

This edited volume discusses the complexity of tumor microenvironments during cancer development, progression and treatment. Each chapter presents a different mathematical model designed to investigate the interactions between tumor cells and the surrounding stroma and stromal cells. The topics covered in this book include the quantitative image analysis of a tumor microenvironment, the microenvironmental barriers in oxygen and drug delivery to tumors, the development of tumor microenvironmental niches and sanctuaries, intravenous transport of the circulating tumor cells, the role of the tumor microenvironment in chemotherapeutic interventions, the interactions between tumor cells, the extracellular matrix, the interstitial fluid, and the immune and stromal cells. Mathematical models discussed here embrace both continuous and agent-based approaches, as well as mathematical frameworks of solid mechanics, fluid dynamics and optimal control theory. The topics in each chapter will be of interest to a biological community wishing to apply the mathematical methods to interpret their experimental data, and to a biomathematical audience interested in exploring how mathematical models can be used to address complex questions in cancer biology.

The Man who Loved Only Numbers - Paul Hoffman 1999

The biography of a mathematical genius. Paul Erdos was the most prolific pure mathematician in history and, arguably, the strangest too. 'A mathematical genius of the first order, Paul Erdos was totally obsessed with his subject -- he thought and wrote mathematics for nineteen hours a day until he died. He travelled constantly, living out of a plastic bag and had no interest in food, sex, companionship, art -- all that is usually indispensible to a human life. Paul Hoffman, in this marvellous biography, gives us a vivid and strangely moving portrait of this singular creature, one that brings out not only Erdos's genius and his oddness, but his warmth and sense of fun, the joyfulness of his strange life.' Oliver Sacks For six decades Erdos had no job, no hobbies, no wife, no home; he

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never learnt to cook, do laundry, drive a car and died a virgin. Instead he travelled the world with his mother in tow, arriving at the doorstep of esteemed mathematicians declaring 'My brain is open'. He travelled until his death at 83, racing across four continents to prove as many theorems as possible, fuelled by a diet of espresso and amphetamines. With more than 1,500 papers written or co-written,

The Birds of Oklahoma - Margaret Morse Nice 1924

New Handbook of Mathematical Psychology: Volume 1, Foundations and Methodology - William H. Batchelder 2016-12-15

The field of mathematical psychology began in the 1950s and includes both psychological theorizing, in which mathematics plays a key role, and applied mathematics, motivated by substantive problems in psychology. Central to its success was the publication of the first 'Handbook of Mathematical Psychology' in the 1960s. The psychological sciences have since expanded to include new areas of research, and significant advances have been made in both traditional psychological domains and in the applications of the computational sciences to psychology. Upholding the rigor of the first title in this field to be published, the New Handbook of Mathematical Psychology reflects the current state of the field by exploring the mathematical and computational foundations of new developments over the last half-century. This first volume focuses on select mathematical ideas, theories, and modeling approaches to form a foundational treatment of mathematical psychology.

Developmental Mathematics - Michael Sullivan III 2015-06-12

This is the eBook of the printed book and may not include any media, website access codes, or print supplements that may come packaged with the bound book. The Sullivan/Struve/Mazzarella Algebra program is designed to motivate students to “do the math”— at home or in the lab—and supports a variety of learning environments. The text is known for its two-column example format that provides annotations to the left of the algebra. These annotations explain what the authors are about to do in each step (instead of what was just done), just as an instructor would do.

Introduction to the Modern Theory of Dynamical Systems - Anatole Katok 1995

A self-contained comprehensive introduction to the mathematical theory of dynamical systems for students and researchers in mathematics, science and engineering.

Mathematical Reviews - 2005

Evaluating Information Retrieval and Access Tasks - Tetsuya Sakai 1901

This open access book summarizes the first two decades of the NII Testbeds and Community for Information access Research (NTCIR). NTCIR is a series of evaluation forums run by a global team of researchers and hosted by the National Institute of Informatics (NII), Japan. The book is unique in that it discusses not just what was done at NTCIR, but also how it was done and the impact it has achieved. For example, in some chapters the reader sees the early seeds of what eventually grew to be the search engines that provide access to content on the World Wide Web, todays smartphones that can tailor what they show to the needs of their owners, and the smart speakers that enrich our lives at home and on the move. We also get glimpses into how new search engines can be built for mathematical formulae, or for the digital record of a lived human life. Key to the success of the NTCIR endeavor was early recognition that information access research is an empirical discipline and that evaluation therefore lay at the core of the enterprise. Evaluation is thus at the heart of each chapter in this book. They show, for example, how the recognition that some documents are more important than others has shaped thinking about evaluation design. The thirty-three contributors to this volume speak for the many hundreds of researchers from dozens of countries around the world who together shaped NTCIR as organizers and participants. This book is suitable for researchers, practitioners, and students--anyone who wants to learn about past and present evaluation efforts in information retrieval, information access, and natural language processing, as well as those who want to participate in an evaluation task or even to design and

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organize one.

Mathematical Modeling - Christof Eck 2017-04-11

Mathematical models are the decisive tool to explain and predict phenomena in the natural and engineering sciences. With this book readers will learn to derive mathematical models which help to understand real world phenomena. At the same time a wealth of important examples for the abstract concepts treated in the curriculum of mathematics degrees are given. An essential feature of this book is that mathematical structures are used as an ordering principle and not the fields of application. Methods from linear algebra, analysis and the theory of ordinary and partial differential equations are thoroughly introduced and applied in the modeling process. Examples of applications in the fields electrical networks, chemical reaction dynamics, population dynamics, fluid dynamics, elasticity theory and crystal growth are treated comprehensively.

Linear Holomorphic Partial Differential Equations and Classical Potential Theory - Dmitry Khavinson 2018-07-09

Why do solutions of linear analytic PDE suddenly break down? What is the source of these mysterious singularities, and how do they propagate? Is there a mean value property for harmonic functions in ellipsoids similar to that for balls? Is there a reflection principle for harmonic functions in higher dimensions similar to the Schwarz reflection principle in the plane? How far outside of their natural domains can solutions of the Dirichlet problem be extended? Where do the continued solutions become singular and why? This book invites graduate students and young analysts to explore these and many other intriguing questions that lead to beautiful results illustrating a nice interplay between parts of modern analysis and themes in “physical” mathematics of the nineteenth century. To make the book accessible to a wide audience including students, the authors do not assume expertise in the theory of holomorphic PDE, and most of the book is accessible to anyone familiar with multivariable calculus and some basics in complex analysis and differential equations.

Multimedia Telecommunications - B. Whyte 1997-07-31

In this volume, written by engineers at the centre of the development of the industry, will be found a comprehensive survey of the wide range of applications encompassed by the term 'Multimedia Telecommunications'. From broadcast television to the specifics of data communications, from entertainment to decision-making, from the human interface to the details of the technology, all are essential facets of the subjects and are treated in this volume. For all users and providers of any form of multimedia service, researchers, development engineers, computer providers or users, IT and Information System managers, change managers in business or in the entertainment industry,Multimedia Telecommunications is essential reading.

Permutation Patterns - Steve Linton 2010-06-03

The study of permutation patterns is a thriving area of combinatorics that relates to many other areas of mathematics, including graph theory, enumerative combinatorics, model theory, the theory of automata and languages, and bioinformatics. Arising from the Fifth International Conference on Permutation Patterns, held in St Andrews in June 2007, this volume contains a mixture of survey and research articles by leading experts, and includes the two invited speakers, Martin Klazar and Mike Atkinson. Together, the collected articles cover all the significant strands of current research: structural methods and simple patterns, generalisations of patterns, various enumerative aspects, machines and networks, packing, and more. Specialists in this area and other researchers in combinatorics and related fields will find much of interest in this book. In addition, the volume provides plenty of material accessible to advanced undergraduates and is a suitable reference for projects and dissertations.

Probability and Statistics for Engineering and the Sciences + Enhanced Webassign Access - 2017

Case Studies in Educational Psychology - Patricia P. Willems 2017-12-06

This case study book serves as a valuable tool for professors and instructors of educational psychology. It contains 18 cases that represent current areas of interest in Educational Psychology embedded within

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current challenges that teachers face in today's elementary grade classrooms. The cases are organized into six major parts: Human Development, Individual Differences and Diversity, Learning Theories, Motivation, Classroom Management, Instructional Approaches, and Assessment and Evaluation.Each case describes a detailed teaching scenario written from either the student or the teachers' perspective. To engage students in critical thinking, perspective-taking, analysis, problem solving and decision-making, the cases have been intentionally written without a conclusion. Because the cases are open-ended, it allows the professor or instructor more flexibility and autonomy in how they use the cases. Each case is followed by thought-provoking questions, highlighting the significant issues in the case, from which to analyze the case and apply various theoretical viewpoints. While the cases do not replace actual classroom experience, they present a way to immerse students in the classroom's culture by providing them with real-life teaching examples.

Group Theoretic Cryptography - Maria Isabel Gonzalez Vasco 2015-04-01

Group theoretic problems have propelled scientific achievements across a wide range of fields, including mathematics, physics, chemistry, and the life sciences. Many cryptographic constructions exploit the computational hardness of group theoretical problems, and the area is viewed as a potential source of quantum-resilient cryptographic primitives

Progress in Industrial Mathematics at ECMI 2016 - Peregrina Quintela 2018-03-26

This book addresses mathematics in a wide variety of applications, ranging from problems in electronics, energy and the environment, to mechanics and mechatronics. Using the classification system defined in the EU Framework Programme for Research and Innovation H2020, several of the topics covered belong to the challenge climate action, environment, resource efficiency and raw materials; and some to health, demographic change and wellbeing; while others belong to Europe in a changing world – inclusive, innovative and reflective societies. The 19th European Conference on Mathematics for Industry, ECMI2016, was held in Santiago de Compostela, Spain in June 2016. The proceedings of this conference include the plenary lectures, ECMI awards and special lectures, mini-symposia (including the description of each mini-symposium) and contributed talks. The ECMI conferences are organized by the European Consortium for Mathematics in Industry with the aim of promoting interaction between academy and industry, leading to innovation in both fields and providing unique opportunities to discuss the latest ideas, problems and methodologies, and contributing to the advancement of science and technology. They also encourage industrial sectors to propose challenging problems where mathematicians can provide insights and fresh perspectives. Lastly, the ECMI conferences are one of the main forums in which significant advances in industrial mathematics are presented, bringing together prominent figures from business, science and academia to promote the use of innovative mathematics in industry.

Facets of Combinatorial Optimization - Michael Jünger 2013-07-03

Martin Grötschel is one of the most influential mathematicians of our time. He has received numerous honors and holds a number of key positions in the international mathematical community. He celebrated his 65th birthday on September 10, 2013. Martin Grötschel's doctoral descendant tree 1983–2012, i.e., the first 30 years, features 39 children, 74 grandchildren, 24 great-grandchildren and 2 great-great-grandchildren, a total of 139 doctoral descendants. This book starts with a personal tribute to Martin Grötschel by the editors (Part I), a contribution by his very special "predecessor" Manfred Padberg on "Facets and Rank of Integer Polyhedra" (Part II), and the doctoral descendant tree 1983–2012 (Part III). The core of this book (Part IV) contains 16 contributions, each of which is coauthored by at least one doctoral descendant. The sequence of the articles starts with contributions to the theory of mathematical optimization, including polyhedral combinatorics, extended formulations, mixed-integer convex optimization, super classes of perfect graphs, efficient algorithms for subtree-telecenters, junctions in acyclic graphs and preemptive

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restricted strip covering, as well as efficient approximation of non-preemptive restricted strip covering. Combinations of new theoretical insights with algorithms and experiments deal with network design problems, combinatorial optimization problems with submodular objective functions and more general mixed-integer nonlinear optimization problems. Applications include VLSI layout design, systems biology, wireless network design, mean-risk optimization and gas network optimization. Computational studies include a semidefinite branch and cut approach for the max k-cut problem, mixed-integer nonlinear optimal control, and mixed-integer linear optimization for scheduling and routing of fly-in safari planes. The two closing articles are devoted to computational advances in general mixed integer linear optimization, the first by scientists working in industry, the second by scientists working in academia. These articles reflect the “scientific facets” of Martin Grötschel who has set standards in theory, computation and applications.

MATLAB® Essentials - William Bober 2017-09-11

All disciplines of science and engineering use numerical methods for complex problem analysis, due to the highly mathematical nature of the field. Analytical methods alone are unable to solve many complex problems engineering students and professionals confront. Introduction to MATLAB® Programming for Engineers and Scientists examines the basic elements of code writing, and describes MATLAB® methods for solving common engineering problems and applications across the range of engineering disciplines. The text uses a class-tested learning approach and accessible two-color page design to guide students from basic programming to the skills needed for future coursework and engineering practice.

Workplace Communication with Computers - National Learning Corporation 2019-02

The Regents (Excelsior) College Examinations (E/RCE) offer you an opportunity to obtain recognition for college-level learning. The E/RCE consists of exams designed to demonstrate achievement and mastery of various college-level subjects, such as the Arts and Sciences, Business, Criminal Justice, Education, Health and Nursing. The Workplace Communication with Computers Passbook(R) prepares you by sharpening your knowledge in advance of the exam and provides hundreds of multiple-choice questions.

Discipline-Based Education Research - National Research Council 2012-08-27

The National Science Foundation funded a synthesis study on the status, contributions, and future direction of discipline-based education research (DBER) in physics, biological sciences, geosciences, and chemistry. DBER combines knowledge of teaching and learning with deep knowledge of discipline-specific science content. It describes the discipline-specific difficulties learners face and the specialized intellectual and instructional resources that can facilitate student understanding. Discipline-Based Education Research is based on a 30-month study built on two workshops held in 2008 to explore evidence on promising practices in undergraduate science, technology, engineering, and mathematics (STEM) education. This book asks questions that are essential to advancing DBER and broadening its impact on undergraduate science teaching and learning. The book provides empirical research on undergraduate teaching and learning in the sciences, explores the extent to which this research currently influences undergraduate instruction, and identifies the intellectual and material resources required to further develop DBER. Discipline-Based Education Research provides guidance for future DBER research. In addition, the findings and recommendations of this report may invite, if not assist, post-secondary institutions to increase interest and research activity in DBER and improve its quality and usefulness across all natural science disciples, as well as guide instruction and assessment across natural science courses to improve student learning. The book brings greater focus to issues of student attrition in the natural sciences that are related to the quality of instruction. Discipline-Based Education Research will be of interest to educators, policy makers, researchers, scholars, decision makers in universities, government agencies, curriculum developers, research sponsors, and education advocacy groups.

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Multivariate Public Key Cryptosystems - Jintai Ding 2006-11-24
Multivariate public key cryptosystems (MPKC) is a fast-developing area in cryptography. This book systematically presents the subject matter for a broad audience and is the first book to focus on this exciting new topic. Information security experts in industry can use the book as a guide for understanding what is needed to implement these cryptosystems for practical applications, and researchers in both computer science and mathematics will find it a good starting point for exploring this new field. It is also suitable as a textbook for advanced-level students.

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