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KEY=ENGINEERING - JAMARCUS PRECIOUS

Differential Equations and Linear Algebra

Wellesley-Cambridge Press **Differential equations and linear algebra are two central topics in the undergraduate mathematics curriculum. This innovative textbook allows the two subjects to be developed either separately or together, illuminating the connections between two fundamental topics, and giving increased flexibility to instructors. It can be used either as a semester-long course in differential equations, or as a one-year course in differential equations, linear algebra, and applications. Beginning with the basics of differential equations, it covers first and second order equations, graphical and numerical methods, and matrix equations. The book goes on to present the fundamentals of vector spaces, followed by eigenvalues and eigenvectors, positive definiteness, integral transform methods and applications to PDEs. The exposition illuminates the natural correspondence between solution methods for systems of equations in discrete and continuous settings. The topics draw on the physical sciences, engineering and economics, reflecting the author's distinguished career as an applied mathematician and expositor.**

Street-Fighting Mathematics

The Art of Educated Guessing and Opportunistic Problem Solving

MIT Press **An antidote to mathematical rigor mortis, teaching how to guess answers without needing a proof or an exact calculation. In problem solving, as in street fighting, rules are for fools: do whatever works—don't just stand there! Yet we often fear an unjustified leap even though it may land us on a correct result. Traditional mathematics teaching is largely about solving exactly stated problems exactly, yet life often hands us partly defined problems needing only moderately accurate solutions. This engaging book is an antidote to the rigor mortis brought on by too much mathematical rigor, teaching us how to guess answers without needing a proof or an exact calculation. In Street-Fighting Mathematics, Sanjoy Mahajan builds, sharpens, and demonstrates tools for educated guessing and down-and-dirty, opportunistic problem solving across diverse fields of knowledge—from mathematics to management. Mahajan describes six tools: dimensional analysis, easy cases, lumping, picture proofs, successive approximation, and reasoning by analogy. Illustrating each tool with numerous examples, he carefully separates the tool—the general principle—from the particular application so that the reader can most easily grasp the tool itself to use on problems of particular interest. Street-Fighting Mathematics grew out of a short course taught by the author at MIT for students ranging from first-year undergraduates to graduate students ready for careers in physics, mathematics, management, electrical engineering, computer science, and biology. They benefited from an approach that avoided rigor and taught them how to use mathematics to solve real problems. Street-Fighting Mathematics will appear in print and online under a Creative Commons Noncommercial Share Alike license.**

Elements of Oil and Gas Well Tubular Design

Gulf Professional Publishing **Elements of Oil and Gas Well Tubular Design offers insight into the complexities of oil well casing and tubing design. The book's intent is to be sufficiently detailed on the tubular-oriented application of the principles of solid mechanics while at the same time providing readers with key equations pertintent to design. It addresses the fundamentals of tubular design theory, bridging the gap between theory and field operation. Filled with derivations and detailed solutions to well design examples, Elements of Oil and Gas Well Tubular Design provides the well designer with sound engineering principles applicable to today's oil and gas wells. Understand engineering mechanics for oil well casing and tubing design with emphasis on derivation, limiations, and application of fundamental equations Grasp well tubular design from one unified source with underlying concepts of stress, strain, and material constitution Quantify practice with detailed well design worked examples amenable to quality check with commercial software**

The Best 388 Colleges 2023

In-Depth Profiles and Ranking Lists to Help Find the Right College for You

Princeton Review **NO ONE KNOWS COLLEGES LIKE THE PRINCETON REVIEW! This comprehensive guide to the nation's best colleges provides in-depth profiles on schools, best-of lists by interest, and tons of helpful student-driven details that will help you or your student choose their best-fit colleges! The Princeton Review's college rankings startedin 1992 with surveys from 30,000 students. Over 30 years and more than a million student surveys later, we stand by our claim that there is no single "best" college, only the best collegefor you... and thatthisis the book that will help you find it! STRAIGHT FROM STUDENTS TO YOU 388 in-depth school profiles based on candid feedback from 143,000 students, covering academics, administration, campus life, and financial aid Insights on unique college character, social scene, and more Direct quotes from students about their school's professors, campus culture, career services, and more RANKING LISTS & RATINGS SCORES Lists of the top 25 colleges in 50 categories based on students' opinions of academics, campus life, facilities, and much more Ratings for every school on Financial Aid, Selectivity, and Quality of Life DETAILED ADMISSIONS INFORMATION The "Inside Word" on competitiveapplications, test scores, tuition, and average indebtedness Comprehensive information on selectivity, freshman profiles, and application deadlines at each school Plus!Free access to 2 full-length practice tests online (1 SAT and 1 ACT) to help you prep for the important admissions-exams part of your admissions journey.**

Mathematics for Computer Science

This book covers elementary discrete mathematics for computer science and engineering. It emphasizes mathematical definitions and proofs as well as applicable methods. Topics include formal logic notation, proof methods; induction, well-ordering; sets, relations; elementary graph theory; integer congruences; asymptotic notation and growth of functions; permutations and combinations, counting principles; discrete probability. Further selected topics may also be covered, such as recursive definition and structural induction; state machines and invariants; recurrences; generating functions.

The Princeton Review The Best 382 Colleges 2018

A survey of life on the nation's campuses offers detailed profiles of the best colleges and rankings of colleges in sixty-two different categories, along with a wealth of information and applications tips.

Rethinking Engineering Education

The CDIO Approach

Springer Science & Business Media **This book describes an approach to engineering education that integrates a comprehensive set of personal, interpersonal, and professional engineering skills with engineering disciplinary knowledge in order to prepare innovative and entrepreneurial engineers. The education of engineers is set in the context of engineering practice, that is, Conceiving, Designing, Implementing, and Operating (CDIO) through the entire lifecycle of engineering processes, products, and systems. The book is both a description of the development and implementation of the CDIO model and a guide to engineering programs worldwide that seek to improve the education of young engineers.**

The Best 386 Colleges, 2021

In-Depth Profiles & Ranking Lists to Help Find the Right College For You

Princeton Review **Make sure you're preparing with the most up-to-date materials! Look for The Princeton Review's newest edition of this book, The Best 387 Colleges, 2022 (ISBN: 9780525570820, on-sale August 2021). Publisher's Note: Products purchased from third-party sellers are not guaranteed by the publisher for quality or authenticity, and may not include access to online tests or materials included with the original product.**

Colleges That Pay You Back, 2018 Edition

The 200 Schools That Give You the Best Bang for Your Tuition Buck

<u>Princeton Review</u> **Profiles two hundred schools on their financial value, including academics, cost of attendance, financial aid, post-grad salary figures, and job satisfaction ratings from alumni.**

Bibliotheca mathematica. Catalogue of books in every branch of mathematics, arithmetic, ... geometry, mechanics, astronomy and geodesy, which have been published in Germany and other countries from 1830 to the middle of 1854. Edited by L. A. Sohncke

Colleges Worth Your Money

A Guide to What America's Top Schools Can Do for You

<u>Rowman & Littlefield</u> **Colleges Worth Your Money: A Guide to What America's Top Schools Can Do for You is an invaluable guide for students making the crucial decision of where to attend college when our thinking about higher education is radically changing. At a time when costs are soaring and competition for admission is higher than ever, the college-bound need to know how prospective schools will benefit them both as students and after graduation. Colleges Worth Your Money provides the most up-to-date, accurate, and comprehensive information for gauging the ROI of America's top schools, including: In-depth profiles of 175 of the top colleges and universities across the U.S.; Over 75 key statistics about each school that cover unique admissions-related data points such as gender-specific acceptance rates, early decision acceptance rates, and five-year admissions trends at each college. The solid facts on career outcomes, including the school's connections with recruiters, the rate of employment post-graduation, where students land internships, the companies most likely to hire students from a particular school, and much more. Data and commentary on each college's merit and need-based aid awards, average student debt, and starting salary outcomes. Top Colleges for America's Top Majors lists highlighting schools that have the best programs in 40+ disciplines. Lists of the "Top Feeder" undergraduate colleges into medical school, law school, tech, journalism, Wall Street, engineering, and more.**

Colleges That Pay You Back, 2017 Edition

The 200 Schools That Give You the Best Bang for Your Tuition Buck

<u>Princeton Review</u> **"Discover colleges that offer exceptional return on investment: a great education at a great price with great career prospects!"--Cover.**

Interactive Systems for Experimental Applied Mathematics

<u>Elsevier</u> **Interactive Systems for Experimental Applied Mathematics is a collection of papers presented at the 1967 Association for Computing Machinery (ACM) Inc. Symposium on Interactive Systems for Experimental Mathematics, held in Washington, D.C. in conjunction with the ACM National Meeting. This book is organized into five parts encompassing 46 chapters. The opening part deals with the general criteria for interactive on-line systems that seem most important for the experimental solution of mathematical problems. This part specifically describes the AMTRAN, REDUCE, EASL, POSE, VENUS, and CHARYBDIS computer systems and languages. The next two parts cover the components of interactive systems, including coherent programming, interactive console, mathematical symbol processing, message system, and computer-aided instruction. The fourth part examines a scheme for permitting a user of conventional procedural programming languages, namely, FORTRAN, to test actual error propagation in numerical calculations. This part also describes the features of Analyst Assistance Program, an on-line graphically oriented conversational computing system designed to perform small nonrecurring numerical computations. The concluding part presents several implications of selected computer systems, the resulting problems, and their proposed solutions. This book is of great benefit to computer scientists and engineers, mathematicians, and undergraduate and graduate students in applied mathematics.**

InfoWorld

InfoWorld is targeted to Senior IT professionals. Content is segmented into Channels and Topic Centers. InfoWorld also celebrates people, companies, and projects.

Fundamentals of Applied Dynamics

<u>MIT Press</u> **An introductory engineering textbook by an award-winning MIT professor that covers the history of dynamics and the dynamical analyses of mechanical, electrical, and electromechanical systems. This introductory textbook offers a distinctive blend of the modern and the historical, seeking to encourage an appreciation for the history of dynamics while also presenting a framework for future learning. The text presents engineering mechanics as a unified field, emphasizing dynamics but integrating topics from other disciplines, including design and the humanities. The book begins with a history of mechanics, suitable for an undergraduate overview. Subsequent chapters cover such topics as three-dimensional kinematics; the direct approach, also known as vectorial mechanics or the momentum approach; the indirect approach, also called lagrangian dynamics or variational dynamics; an expansion of the momentum and lagrangian formulations to extended bodies; lumped-parameter electrical and electromagnetic devices; and equations of motion for one-dimensional continuum models. The book is noteworthy in covering both lagrangian dynamics and vibration analysis. The principles covered are relatively few and easy to articulate; the examples are rich and broad. Summary tables, often in the form of flowcharts, appear throughout. End-of-chapter problems begin at an elementary level and become increasingly difficult. Appendixes provide theoretical and mathematical support for the main text.**

The Art of Insight in Science and Engineering

Mastering Complexity

<u>MIT Press</u> **Tools to make hard problems easier to solve. In this book, Sanjoy Mahajan shows us that the way to master complexity is through insight rather than precision. Precision can overwhelm us with information, whereas insight connects seemingly disparate pieces of information into a simple picture. Unlike computers, humans depend on insight. Based on the author's fifteen years of teaching at MIT, Cambridge University, and Olin College, The Art of Insight in Science and Engineering shows us how to build insight and find understanding, giving readers tools to help them solve any problem in science and engineering. To master complexity, we can organize it or discard it. The Art of Insight in Science and Engineering first teaches the tools for organizing complexity, then distinguishes the two paths for discarding complexity: with and without loss of information. Questions and problems throughout the text help readers master and apply these groups of tools. Armed with this three-part toolchest, and without complicated mathematics, readers can estimate the flight range of birds and planes and the strength of chemical bonds, understand the physics of pianos and xylophones, and explain why skies are blue and sunsets are red. The Art of Insight in Science and Engineering will appear in print and online under a Creative Commons Noncommercial Share Alike license.**

Academic Earmarks

Hearings Before the Committee on Science, Space, and Technology, U.S. House of Representatives, One Hundred Third Congress, First Session, June 16, September 15, 1993

The Best Value Colleges, 2019 Edition

200 Schools with Exceptional ROI for Your Tuition Investment

Princeton Review **DISCOVER COLLEGES THAT OFFER EXCEPTIONAL RETURN ON YOUR INVESTMENT! This guide brings you 200 schools that offer a great education with great career prospects--at a great price! College is a major financial investment, and one that too many students enter into blindly. The Princeton Review eases that uncertainty with this guide to colleges and universities where students get the best return on their tuition investment. These schools offer generous financial aid, excellent academics, and valuable career-building experiences for a successful post-college outcome! Help Finding Best Value Colleges. - Our top-value picks--chosen based on 40+ data points, including academics, cost of attendance, financial aid, and post-grad salary figures - Profiles of 200 schools that offer fantastic value, with insight into their career services offerings 7 Unique Ranking Lists. - The top 25 schools with the Best Alumni Network, Best Career Placement, Top Financial Aid, and more - The highest-paying majors and great schools that offer them Valuable Career Information from PayScale.com. - Starting and mid-career salary information for graduates of each school - Percentages of alumni who report having meaningful jobs and who majored in science/technology/engineering/math (STEM) fields**

The Best Value Colleges, 2020 Edition

75 Schools That Give You the Most for Your Money

Princeton Review **Now in a new, more user-friendly package, this 13th edition of The Princeton Review's THE BEST VALUE COLLEGES provides readers with the guidance they need to make smart choices about how they spend their tuition dollars! College is a major financial investment ... and one that too many students enter into blindly. The Princeton Review eases that uncertainty with this guide to colleges and universities where students get the best return on their tuition investment. These 75 schools--plus an expanded list with 125 more online--offer generous financial aid, excellent academics, and valuable career-building experiences for a successful post-college outcome. THE BEST VALUE COLLEGES INCLUDES: * Profiles of our 75 top-value picks--schools that offer fantastic value, chosen based on 40+ data points, including academics, cost of attendance, financial aid, and post-grad salary figures * Online access to the full profiles for an additional 125 high value schools * Lists covering schools with the Best Alumni Network, Best Career Placement, Top Financial Aid, and more * Starting and mid-career salary information for graduates of each school * Percentages of alumni who report having "meaningful jobs," and who majored in science/technology/engineering/math (STEM) fields * And much more!**

The Best 385 Colleges, 2020 Edition

In-Depth Profiles & Ranking Lists to Help Find the Right College For You

Princeton Review **Make sure you're preparing with the most up-to-date materials! Look for The Princeton Review's newest edition of this book, The Best 386 Colleges, 2021 Edition (ISBN: 9780525569725, on-sale August 2020). Publisher's Note: Products purchased from third-party sellers are not guaranteed by the publisher for quality or authenticity, and may not include access to online tests or materials included with the original product.**

The Best 381 Colleges 2017

Selects three hundred and eighty one of the best schools in the United States based on student feedback, and provides information on tuition, financial aid, housing, admission requirements, and similar statistics.

Biomolecular Feedback Systems

Princeton University Press **This book provides an accessible introduction to the principles and tools for modeling, analyzing, and synthesizing biomolecular systems. It begins with modeling tools such as reaction-rate equations, reduced-order models, stochastic models, and specific models of important core processes. It then describes in detail the control and dynamical systems tools used to analyze these models. These include tools for analyzing stability of equilibria, limit cycles, robustness, and parameter uncertainty. Modeling and analysis techniques are then applied to design examples from both natural systems and synthetic biomolecular circuits. In addition, this comprehensive book addresses the problem of modular composition of synthetic circuits, the tools for analyzing the extent of modularity, and the design techniques for ensuring modular behavior. It also looks at design trade-offs, focusing on perturbations due to noise and competition for shared cellular resources. Featuring numerous exercises and illustrations throughout, Biomolecular Feedback Systems is the ideal textbook for advanced undergraduates and graduate students. For researchers, it can also serve as a self-contained reference on the feedback control techniques that can be applied to biomolecular systems. Provides a user-friendly introduction to essential concepts, tools, and applications Covers the most commonly used modeling methods Addresses the modular design problem for biomolecular systems Uses design examples from both natural systems and synthetic circuits Solutions manual (available only to professors at press.princeton.edu) An online illustration package is available to professors at press.princeton.edu**

INIS, Authority List for Corporate Entries and Report Number Prefixes

The Best 387 Colleges 2022

In-Depth Profiles and Ranking Lists to Help Find the Right College for You

Princeton Review **"In-depth profiles, ratings & lists to help find the right college for you--based on feedback from 154,000 students"--Cover.**

Frontiers in Pen and Touch

Impact of Pen and Touch Technology on Education

Springer **This inspirational book contains evidence-based research presented by educational scientists, for the advancement of stylus-based technology and its applications for college and K-12 classrooms. Writing and sketching are an important part of teaching and learning, and digital ink technologies enable us to perform these activities in a digital world. Frontiers in Pen and Touch aims to highlight software and hardware practices and innovations, to encourage transformational use of pen and touch in the classroom. The content of the book is derived from the 2016 Conference on Pen and Touch Technology on Education (CPTTE). Chapters written by academic practitioners provide stories of success for ink, including multimedia content creation and increasing student engagement. Industry and academic researchers share their findings and present intelligent systems that enable pen and touch systems to teach and motivate students. This book is a must-read for anyone wanting to harness and integrate pen and touch for improving today's student experiences.**

The Configuration Space Method for Kinematic Design of Mechanisms

MIT Press **A novel algorithmic approach to mechanism design based on a geometric representation of kinematic function called configuration space partitions. This book presents the configuration space method for computer-aided design of mechanisms with changing part contacts. Configuration space is a complete and compact geometric representation of part motions and part interactions that supports the core mechanism design tasks of analysis, synthesis, and tolerancing. It is the first general algorithmic treatment of the kinematics of higher pairs with changing contacts. It will help designers detect and correct design flaws and unexpected kinematic behaviors, as demonstrated in the book's four case studies taken from industry. After presenting the configuration space framework and algorithms for mechanism kinematics, the authors describe algorithms for kinematic analysis, tolerancing, and synthesis based on configuration spaces. The case studies follow, illustrating the application of the configuration space method to the analysis and design of automotive, micro-mechanical, and optical mechanisms. Appendices offer a catalog of higher-pair mechanisms and a description of HIPAIR, an open source C++ mechanical design system that implements some of the configuration space methods described in the book, including configuration space visualization and kinematic simulation. HIPAIR comes with an interactive graphical user interface and many sample mechanism input files. The Configuration Space Method for Kinematic Design of Mechanisms will be a valuable resource for students, researchers, and engineers in mechanical engineering, computer science, and robotics.**

Learning Strategies in Engineering Mathematics

Conceptualisation, Development, and Evaluation of MP2-MathePlus

Springer **Birgit Griese presents MP2-Math/Plus, a support project for first-year students in engineering at Ruhr-Universität Bochum that aims at preventing unnecessary drop-out. Conceptualisation and development of the project follow a design research approach according to Gravemeijer, Cobb, and van den Akker. The interventions focus on learning strategies which are collected in a pre-post design with the aid of the LIST questionnaire by Wild and Schiefele. These and other data are utilised for the evaluation of MP2-Math/Plus. The results confirm the adaptations of the project procedures in successive cycles, stress the importance of effort and motivation, and assess the success of the project.**

A to Z of Women in Science and Math

Infobase Publishing **From ancient times to the present day, scientifically inclined women in many cultures have had to battle against the traditional belief that men are more cognitively adept than women. At times throughout history, women were persecuted for their attempts to break down traditional gender barriers. Today, women scientists and mathematicians must continue to defend the quality of their work and demand the respect they deserve in the mathematical and scientific communities.A to Z of Women in Science and Math, Revised Edition profiles 195 women who fought against these stereotypes throughout history and all over the world to forge new discoveries and theories that would eventually change the way we view science. This thoroughly revised book updates the story of each individual to the present day and features 38 new profiles. Among the profiles included are those of chemists, astronomers, geologists, environmental scientists, and a range of other professions and careers. In addition, new photographs have been added, and the bibliography has been updated. Subject indexes allow the reader to search by such professions as microbiology and paleontology.Additional subject indexes organize individuals by country of birth, country of major scientific activity, and year of birth.**

Education and Professional Employment in the U. S. S. R.

Prepared for the National Science Foundation

National Academies

Amazing Feats of Mechanical Engineering

ABDO **Engineers design our modern world. They combine science and technology to create incredible vehicles, structures, and objects. This title examines amazing feats of mechanical engineering. Engaging text explores Mars rovers, robotic surgery systems, and advanced wind turbines. It also examines the engineers who made these projects a reality and traces the history of the discipline. Relevant sidebars, stunning photos, and a glossary aid readers' understanding of the topic. A hands-on project and career-planning chart give readers a sense of what it takes to become an engineer. Additional features include a table of contents, a selected bibliography, source notes, and an index, plus essential facts about each featured feat of engineering. Aligned to Common Core Standards and correlated to state standards. Essential Library is an imprint of Abdo Publishing, a division of ABDO.**

Oswaal CBSE Question Bank Class 9 Hindi B, English, Math, Science & Social Science (Set of 5 Books) (For 2022-23 Exam)

Oswaal Books and Learning Private Limited **CBSE Books Class 9: Chapter Navigation Tools CBSE Syllabus :CBSE Question Banks Class 9 are based on latest & full syllabus Revision Notes: CBSE Books Class 9: Chapter wise & Topic wise Exam Questions: CBSE Question Bank Class 9: Includes Previous Years KVS exam questions New Typology of Questions: CBSE Questions Banks Class 9 have MCQs, VSA,SA & LA including case based questions NCERT Corner: CBSE Books Class 9 have Fully Solved Textbook Questions (Exemplar Questions in Physics, Chemistry, Biology) CBSE Question Banks Class 9 have Exam Oriented Prep Tools: Commonly Made Errors & Answering Tips to avoid errors and score improvement Mind Maps for quick learning Concept Videos for blended learning Academically Important (AI) look out for highly expected questions for the upcoming exams Mnemonics for better memorisation Self Assessment Papers Unit wise test for self preparation**

Oswaal CBSE Question Bank Class 9 Hindi A, English, Math, Science & Social Science (Set of 5 Books) (For 2022-23 Exam)

Oswaal Books and Learning Private Limited **CBSE Books Class 9: Chapter Navigation Tools CBSE Syllabus :CBSE Question Banks Class 9 are based on latest & full syllabus Revision Notes: CBSE Books Class 9: Chapter wise & Topic wise Exam Questions: CBSE Question Bank Class 9: Includes Previous Years KVS exam questions New Typology of Questions: CBSE Questions Banks Class 9 have MCQs, VSA,SA & LA including case based questions NCERT Corner: CBSE Books Class 9 have Fully Solved Textbook Questions (Exemplar Questions in Physics, Chemistry, Biology) CBSE Question Banks Class 9 have Exam Oriented Prep Tools: Commonly Made Errors & Answering Tips to avoid errors and score improvement Mind Maps for quick learning Concept Videos for blended learning Academically Important (AI) look out for highly expected questions for the upcoming exams Mnemonics for better memorisation Self Assessment Papers Unit wise test for self preparation**

Marine Hydrodynamics

MIT Press **A textbook that offers a unified treatment of the applications of hydrodynamics to marine problems. The applications of hydrodynamics to naval architecture and marine engineering expanded dramatically in the 1960s and 1970s. This classic textbook, originally published in 1977, filled the need for a single volume on the applications of hydrodynamics to marine problems. The book is solidly based on fundamentals, but it also guides the student to an understanding of engineering applications through its consideration of realistic configurations. The book takes a balanced approach between theory and empirics, providing the necessary theoretical background for an intelligent evaluation and application of empirical procedures. It also serves as an introduction to more specialized research methods. It unifies the seemingly diverse problems of marine hydrodynamics by examining them not as separate problems but as related applications of the general field of hydrodynamics. The book evolved from a first-year graduate course in MIT's Department of Ocean Engineering. A knowledge of advanced calculus is assumed. Students will find a previous introductory course in fluid dynamics helpful, but the book presents the necessary fundamentals in a self-contained manner. The 40th anniversary of this pioneering book offers a foreword by John Grue. Contents Model Testing • The Motion of a Viscous Fluid • The Motion of an Ideal Fluid • Lifting Surfaces • Waves and Wave Effects • Hydrodynamics of Slender Bodies**

Catalogs of Courses

Includes general and summer catalogs issued between 1878/1879 and 1995/1997.

Springer Handbook of Mechanical Engineering

Springer Nature **This resource covers all areas of interest for the practicing engineer as well as for the student at various levels and educational institutions. It features the work of authors from all over the world who have contributed their expertise and support the globally working engineer in finding a solution for today's mechanical engineering problems. Each subject is discussed in detail and supported by numerous figures and tables.**

Wave Propagation

An Introduction to Engineering Analyses

MIT Press **An engineering-oriented introduction to wave propagation by an award-winning MIT professor, with highly accessible expositions and mathematical details—many classical but others not heretofore published. A wave is a traveling disturbance or oscillation—intentional or unintentional—that usually transfers energy without a net displacement of the medium in which the energy travels. Wave propagation is any of the means by which a wave travels. This book offers an engineering-oriented introduction to wave propagation that focuses on wave propagation in one-dimensional models that are anchored by the classical wave equation. The text is written in a style that is highly accessible to undergraduates, featuring extended and repetitive expositions and displaying and explaining mathematical and physical details—many classical but others not heretofore published. The formulations are devised to provide analytical foundations for studying more advanced topics of wave propagation. After a precalculus summary of rudimentary wave propagation and an introduction of the classical wave equation, the book presents solutions for the models of systems that are dimensionally infinite, semi-infinite, and finite. Chapters typically**

begin with a vignette based on some aspect of wave propagation, drawing on a diverse range of topics. The book provides more than two hundred end-of-chapter problems (supplying answers to most problems requiring a numerical result or brief analytical expression). Appendixes cover equations of motion for strings, rods, and circular shafts; shear beams; and electric transmission lines.

Principles of Computer System Design

An Introduction

Morgan Kaufmann **Principles of Computer System Design is the first textbook to take a principles-based approach to the computer system design. It identifies, examines, and illustrates fundamental concepts in computer system design that are common across operating systems, networks, database systems, distributed systems, programming languages, software engineering, security, fault tolerance, and architecture. Through carefully analyzed case studies from each of these disciplines, it demonstrates how to apply these concepts to tackle practical system design problems. To support the focus on design, the text identifies and explains abstractions that have proven successful in practice such as remote procedure call, client/service organization, file systems, data integrity, consistency, and authenticated messages. Most computer systems are built using a handful of such abstractions. The text describes how these abstractions are implemented, demonstrates how they are used in different systems, and prepares the reader to apply them in future designs. The book is recommended for junior and senior undergraduate students in Operating Systems, Distributed Systems, Distributed Operating Systems and/or Computer Systems Design courses; and professional computer systems designers. Features: Concepts of computer system design guided by fundamental principles. Cross-cutting approach that identifies abstractions common to networking, operating systems, transaction systems, distributed systems, architecture, and software engineering. Case studies that make the abstractions real: naming (DNS and the URL); file systems (the UNIX file system); clients and services (NFS); virtualization (virtual machines); scheduling (disk arms); security (TLS). Numerous pseudocode fragments that provide concrete examples of abstract concepts. Extensive support. The authors and MIT OpenCourseWare provide on-line, free of charge, open educational resources, including additional chapters, course syllabi, board layouts and slides, lecture videos, and an archive of lecture schedules, class assignments, and design projects.**

Technological Innovation in Legacy Sectors

Oxford University Press **The American economy faces two deep problems: expanding innovation and raising the rate of quality job creation. Both have roots in a neglected problem: the resistance of Legacy economic sectors to innovation. While the U.S. has focused its policies on breakthrough innovations to create new economic frontiers like information technology and biotechnology, most of its economy is locked into Legacy sectors defended by technological/ economic/ political/ social paradigms that block competition from disruptive innovations that could challenge their models. Americans like to build technology "covered wagons" and take them "out west" to open new innovation frontiers; we don't head our wagons "back east" to bring innovation to our Legacy sectors. By failing to do so, the economy misses a major opportunity for innovation, which is the bedrock of U.S. competitiveness and its standard of living. Technological Innovation in Legacy Sectors uses a new, unifying conceptual framework to identify the shared features underlying structural obstacles to innovation in major Legacy sectors: energy, air and auto transport, the electric power grid, buildings, manufacturing, agriculture, health care delivery and higher education, and develops approaches to understand and transform them. It finds both strengths and obstacles to innovation in the national innovation environments - a new concept that combines the innovation system and the broader innovation context - for a group of Asian and European economies. Manufacturing is a major Legacy sector that presents a particular challenge because it is a critical stage in the innovation process. By increasingly offshoring production, the U.S. is losing important parts of its innovation capacity. "Innovate here, produce here," where the U.S. took all the gains of its strong innovation system at every stage, is being replaced by "innovate here, produce there," which threatens to lead to "produce there, innovate there." To bring innovation to Legacy sectors, authors William Bonvillian and Charles Weiss recommend that policymakers focus on all stages of innovation from research through implementation. They should fill institutional gaps in the innovation system and take measures to address structural obstacles to needed disruptive innovations. In the specific case of advanced manufacturing, the production ecosystem can be recreated to reverse "jobless innovation" and add manufacturing-led innovation to the U.S.'s still-strong, research-oriented innovation system.**

Computation Structures

MIT Press **Computer Systems Organization -- general.**

21: Bringing Down the House - Movie Tie-In

The Inside Story of Six M.I.T. Students Who Took Vegas for Millions

Simon and Schuster **Recounts the story of how a notorious gang of MIT blackjack savants devised and received backing for a system for winning at the world's most sophisticated casinos, an endeavor that earned them more than three million dollars. Originally published as Bringing Down the House. Reissue. (A Columbia Pictures film, written by Peter Steinfeld & Allan Loeb, directed by Robert Luketic, releasing March 2008, starring Kevin Spacey, Kate Bosworth, Laurence Fishburne, Jim Sturgess, & others) (Current Affairs)**