

## Best Books Science Engineering

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**Basher Science: The Complete Periodic Table** Springer Nature

This well-established and widely adopted book, now in its Sixth Edition, provides a thorough analysis of the subject in an easy-to-read style. It analyzes, systematically and logically, the basic concepts and their applications to enable the students to comprehend the subject with ease. The book begins with a clear exposition of the background topics in chemical equilibrium, kinetics, atomic structure and chemical bonding. Then follows a detailed discussion on the structure of solids, crystal imperfections, phase diagrams, solid-state diffusion and phase transformations. This provides a deep insight into the structural control necessary for optimizing the various properties of materials. The mechanical properties covered include elastic, anelastic and viscoelastic behaviour, plastic deformation, creep and fracture phenomena. The next four chapters are devoted to a detailed description of electrical conduction, superconductivity, semiconductors, and magnetic and dielectric properties. The final chapter on 'Nanomaterials' is an important addition to the sixth edition. It describes the state-of-art developments in this new field. This eminently readable and student-friendly text not only provides a masterly analysis of all the relevant topics, but also makes them comprehensible to the students through the skillful use of well-drawn diagrams, illustrative tables, worked-out examples, and in many other ways. The book is primarily intended for undergraduate students of all branches of engineering (B.E./B.Tech.) and postgraduate students of Physics, Chemistry and Materials Science. **KEY FEATURES** • All relevant units and constants listed at the beginning of each chapter • A note on SI units and a full table of conversion factors at the beginning • A new chapter on 'Nanomaterials' describing the state-of-art information • Examples with solutions and problems with answers • About 350 multiple choice questions with answers

**Rapid Development** Dorling Kindersley Ltd

Renowned astronomer Carl Sagan's classic bestseller that "dives into the past, present, and future of science, dealing with the mind-staggering enormity of the cosmos in which we exist" (Associated Press)—with an Introduction by Ann Druyan and a Foreword by Neil deGrasse Tyson "Sagan dazzles the mind with the miracle of our survival, framed by the stately galaxies of space."—Cosmopolitan **THE INSPIRATION FOR THE FOX MINISERIES COSMOS: POSSIBLE WORLDS, HOSTED BY NEIL DEGRASSE TYSON AND STARRING SETH MACFARLANE AND SIR PATRICK STEWART** In clear-eyed prose, Carl Sagan reveals a jewel-like blue world inhabited by a life form that is just beginning to discover its own identity and to venture into the vast ocean of space. Featuring full-color illustrations, *Cosmos* retraces the fourteen billion years of cosmic evolution that have transformed matter into consciousness, exploring such topics as the origin of life, the human brain, Egyptian hieroglyphics, spacecraft missions, the death of the Sun, the evolution of galaxies, and the forces and individuals who helped shape modern science.

**Information Literacy for Science and**

**Engineering Students** Bloomsbury Publishing USA

Fifty-two inspiring and insightful profiles of history's brightest female scientists. "Rachel Swaby's no-nonsense and needed Headstrong dynamically profiles historically overlooked female visionaries in science, technology, engineering, and math."—Elle In 2013, the New York Times published an obituary for Yvonne Brill. It began: "She made a mean beef stroganoff, followed her husband from job to job, and took eight years off from work to raise three children." It wasn't until the second paragraph that readers discovered why the Times had devoted several hundred words to her life: Brill was a brilliant rocket scientist who invented a propulsion system to keep communications satellites in orbit, and had recently been awarded the National Medal of Technology and Innovation. Among the questions the obituary—and consequent outcry—prompted were, Who are the role models for today's female scientists, and where can we find the stories that cast them in their true light? Headstrong delivers a powerful, global, and engaging response. Covering Nobel Prize winners and major innovators, as well as lesser-known but hugely significant scientists who influence our every day, Rachel Swaby's vibrant profiles span centuries of courageous thinkers and illustrate how each one's ideas developed, from their first

moment of scientific engagement through the research and discovery for which they're best known. This fascinating tour reveals 52 women at their best—while encouraging and inspiring a new generation of girls to put on their lab coats.

Headstrong National Academies Press

Children's book introducing scientific concepts and famous scientists with colorful illustrations.

**Cosmos** John Wiley & Sons

This book is about the role of some engineering principles in our everyday lives. Engineers study these principles and use them in the design and analysis of the products and systems with which they work. The same principles play basic and influential roles in our everyday lives as well. Whether the concept of entropy, the moments of inertia, the natural frequency, the Coriolis acceleration, or the electromotive force, the roles and effects of these phenomena are the same in a system designed by an engineer or created by nature. This shows that learning about these engineering concepts helps us to understand why certain things happen or behave the way they do, and that these concepts are not strange phenomena invented by individuals only for their own use, rather, they are part of our everyday physical and natural world, but are used to our benefit by the engineers and scientists. Learning about these principles might also help attract more and more qualified and interested high school and college students to the engineering fields. Each chapter of this book explains one of these principles through examples, discussions, and at times, simple equations.

**Engineering Principles in Everyday Life for Non-Engineers** Workman Publishing

**Comprehensive Membrane Science and Engineering, Four Volume Set** covers all aspects of membrane science and technology - from basic phenomena to the most advanced applications and future perspectives. Modern membrane engineering is critical to the development of process-intensification strategies and to the stimulation of industrial growth. The work presents researchers and industrial managers with an indispensable tool toward achieving these aims. Covers membrane science theory and economics, as well as applications ranging from chemical purification and natural gas enrichment to potable water Includes contributions and case studies from internationally recognized experts and from up-and-coming researchers working in this multi-billion dollar field Takes a unique, multidisciplinary approach that stimulates research in hybrid technologies for current (and future) life-saving applications (artificial organs, drug delivery)

**The Fascinating Engineering Book for Kids** Ballantine Books

Science, engineering, and technology permeate nearly every facet of modern life and hold the key to solving many of humanity's most pressing current and future challenges. The United States' position in the global economy is declining, in part because U.S. workers lack fundamental knowledge in these fields. To address the critical issues of U.S. competitiveness and to better prepare the workforce, A Framework for K-12 Science Education proposes a new approach to K-12 science education that will capture students' interest and provide them with the necessary foundational knowledge in the field. A Framework for K-12 Science Education outlines a broad set of expectations for students in science and engineering in grades K-12. These expectations will inform the development of new standards for K-12 science education and, subsequently, revisions to curriculum, instruction, assessment, and professional development for educators. This book identifies three dimensions that convey the core ideas and practices around which science and engineering education in these grades should be built. These three dimensions are: crosscutting concepts that unify the study of science through their common application across science and engineering; scientific and engineering practices; and disciplinary core ideas in the physical sciences, life sciences, and earth and space sciences and for engineering, technology, and the applications of science. The overarching goal is for all high school graduates to have sufficient knowledge of science and engineering to engage in public discussions on science-related issues, be careful consumers of scientific and technical information, and enter the careers of their choice. A Framework for K-12 Science Education is the first step in a process that can inform state-level decisions and achieve a research-grounded basis for improving science instruction and learning across the country. The book will guide standards developers, teachers,

curriculum designers, assessment developers, state and district science administrators, and educators who teach science in informal environments.

**Remaking the World** Crown

A second edition of a popular guide to scientific and technical communication, updated to reflect recent changes in computer technology. This guide covers the basics of scientific and engineering communication, including defining an audience, working with collaborators, searching the literature, organizing and drafting documents, developing graphics, and documenting sources. The documents covered include memos, letters, proposals, progress reports, other types of reports, journal articles, oral presentations, instructions, and CVs and resumes. Throughout, the authors provide realistic examples from actual documents and situations. The materials, drawn from the authors' experience teaching scientific and technical communication, bridge the gap between the university novice and the seasoned professional. In the five years since the first edition was published, communication practices have been transformed by computer technology. Today, most correspondence is transmitted electronically, proposals are submitted online, reports are distributed to clients through intranets, journal articles are written for electronic transmission, and conference presentations are posted on the Web. Every chapter of the book reflects these changes. The second edition also includes a compact Handbook of Style and Usage that provides guidelines for sentence and paragraph structure, punctuation, and usage and presents many examples of strategies for improved style.

**The Art of Doing Science and Engineering** McGraw-Hill Professional Publishing

Corporate and commercial software-development teams all want solutions for one important problem—how to get their high-pressure development schedules under control. In **RAPID DEVELOPMENT**, author Steve McConnell addresses that concern head-on with overall strategies, specific best practices, and valuable tips that help shrink and control development schedules and keep projects moving. Inside, you'll find: A rapid-development strategy that can be applied to any project and the best practices to make that strategy work Candid discussions of great and not-so-great rapid-development practices—estimation, prototyping, forced overtime, motivation, teamwork, rapid-development languages, risk management, and many others A list of classic mistakes to avoid for rapid-development projects, including creeping requirements, shortchanged quality, and silver-bullet syndrome Case studies that vividly illustrate what can go wrong, what can go right, and how to tell which direction your project is going **RAPID DEVELOPMENT** is the real-world guide to more efficient applications development.

**Engineering Science** Pearson Education

Comprehensive engineering science coverage that is fully in line with the latest vocational course requirements New chapters on heat transfer and fluid mechanics Topic-based approach ensures that this text is suitable for all vocational engineering courses Coverage of all the mechanical, electrical and electronic principles within one volume provides a comprehensive exploration of scientific principles within engineering **Engineering Science** is a comprehensive textbook suitable for all vocational and pre-degree courses. Taking a subject-led approach, the essential scientific principles engineering students need for their studies are topic-by-topic based in presentation. Unlike most of the textbooks available for this subject, Bill Bolton goes beyond the core science to include the mechanical, electrical and electronic principles needed in the majority of courses. A concise and accessible text is supported by numerous worked examples and problems, with a complete answer section at the back of the book. Now in its sixth edition, the text has been fully updated in line with the current BTEC National syllabus and will also prove an essential reference for students embarking on Higher National engineering qualifications and Foundation Degrees.

**The Book of Massively Epic Engineering Disasters**

Hachette+ORM

This Second Edition of the go-to reference combines the classical analysis and modern applications of applied mathematics for chemical engineers. The book introduces traditional techniques for solving ordinary differential equations (ODEs), adding new material on approximate solution methods such as perturbation techniques and elementary numerical solutions. It also includes analytical methods to deal with important classes of finite-difference equations. The last half discusses numerical solution techniques and partial differential equations (PDEs). The reader will then be equipped to apply mathematics in the formulation of problems in

chemical engineering. Like the first edition, there are many examples provided as homework and worked examples.

**In Pursuit of the Unknown** Springer Science & Business Media  
A groundbreaking treatise by one of the great mathematicians of our age, who outlines a style of thinking by which great ideas are conceived. What inspires and spurs on a great idea? Can we train ourselves to think in a way that will enable world-changing understandings and insights to emerge? Richard Hamming said we can. He first inspired a generation of engineers, scientists, and researchers in 1986 with “You and Your Research,” an electrifying sermon on why some scientists do great work, why most don’t, why he did, and why you can—and should—too. *The Art of Doing Science and Engineering* is the full expression of what “You and Your Research” outlined. It’s a book about thinking; more specifically, a style of thinking by which great ideas are conceived. The book is filled with stories of great people performing mighty deeds—but they are not meant simply to be admired. Instead, they are to be aspired to, learned from, and surpassed. Hamming consistently returns to Shannon’s information theory, Einstein’s theory of relativity, Grace Hopper’s work on high-level programming, Kaiser’s work on digital filters, and his own work on error-correcting codes. He also recounts a number of his spectacular failures as clear examples of what to avoid. Originally published in 1996 and adapted from a course that Hamming taught at the US Naval Postgraduate School, this edition includes an all-new foreword by designer, engineer, and founder of Dynamicland Bret Victor, plus more than 70 redrawn graphs and charts. *The Art of Doing Science and Engineering* is a reminder that a capacity for learning and creativity are accessible to everyone. Hamming was as much a teacher as a scientist, and having spent a lifetime forming and confirming a theory of great people and great ideas, he prepares the next generation for even greater distinction.

**Engineering in the Ancient World** Springer Nature  
This new edition of the book on the properties of materials used in engineering answers some fundamental questions about how the material world around us functions. In particular: the author focuses on so-called strong materials, such as metals, wood, ceramics, glass, and bone. For each material in question, the author explains the unique physical and chemical basis for its inherent structural qualities. He also shows how an in-depth understanding of these materials’ intrinsic strengths (and weaknesses) guides our engineering choices, allowing us to build the structures that support our modern society.

**The Way Things Work Now** Univ of California Press  
Little scientists will understand science in seconds with this essential homework-helping guide. Learn about everything from molecules and magnetism to rockets and radio waves and find out how a hot-air balloon rises, how erosion flattens mountains, how light waves zip through space, and how the human eye sees colours! With STEM (science, technology, engineering, and maths) subjects ever more important in today’s technological world, *How to be Good at Science, Technology, and Engineering* is the perfect book to inspire and educate inquisitive young minds and prepare them for the future. This is the perfect homework guide for parents and their children, with all core curriculum areas of science included. Cool illustrations show the appliance of science in the real world: see how microchips, tractors, and suspension bridges work. Hands-on projects feature fun experiments to try at home or school: try polishing old coins in vinegar, or make an erupting volcano with baking soda.

**Clean Code** HarperCollins  
A New York Times Bestseller Explainer-in-Chief David Macaulay updates the worldwide bestseller *The Way Things Work* to capture the latest developments in the technology that most impacts our lives. Famously packed with information on the inner workings of everything from windmills to Wi-Fi, this extraordinary and humorous book both guides readers through the fundamental principles of machines, and shows how the developments of the past are building the world of tomorrow. This sweepingly revised edition embraces all of the latest developments, from touchscreens to 3D printer. Each scientific principle is brilliantly explained—with the help of a charming, if rather slow-witted, woolly mammoth. An illustrated survey of significant inventions closes the book, along with a glossary of technical terms, and an index. What possible link could there be between zippers and plows, dentist drills and windmills? Parking meters and meat grinders, jumbo jets and jackhammers, remote control and rockets, electric guitars and egg beaters? Macaulay explains them all.

**How to Be Good at Science, Technology, and Engineering** Basic Books

Power, Speed, and Form is the first accessible account of the engineering behind eight breakthrough innovations that transformed American life from 1876 to 1939—the telephone, electric power, oil refining, the automobile, the airplane, radio,

the long-span steel bridge, and building with reinforced concrete. Beginning with Thomas Edison’s system to generate and distribute electric power, the authors explain the Bell telephone, the oil refining processes of William Burton and Eugene Houdry, Henry Ford’s Model T car and the response by General Motors, the Wright brothers’ airplane, radio innovations from Marconi to Armstrong, Othmar Ammann’s George Washington Bridge, the reinforced concrete structures of John Eastwood and Anton Tedesko, and in the 1930s, the Chrysler Airflow car and the Douglas DC-3 airplane. These innovations used simple numerical ideas, which the Billingtons integrate with short narrative accounts of each breakthrough—a unique and effective way to introduce engineering and how engineers think. The book shows how the best engineering exemplifies efficiency, economy and, where possible, elegance. With Power, Speed, and Form, educators, first-year engineering students, liberal arts students, and general readers now have, for the first time in one volume, an accessible and readable history of engineering achievements that were vital to America’s development and that are still the foundations of modern life.

**The Quantum Moment** National Geographic Books  
From acoustics to holograms—explore awesome engineering facts for kids ages 8 to 12 Did you know that computer chips can be thousands of times smaller than a grain of sand? Or that whale fins inspired the wind turbine? *The Fascinating Engineering Book for Kids* is packed with 500 incredible facts about every branch of engineering with full-color pictures to match! Kids (and adults) will learn about some of the most famous and influential engineers in history, and explore how engineers helped build so many of the amazing things in our world, from underwater machines to spaceships and satellites! Dig into the best in kids’ engineering books with fascinating trivia like: The Ancient Theatre of Epidaurus is an amphitheater in Greece built in the fourth century. It was designed so well that it is still used today! GloFish are genetically engineered to enhance their luminescence—a glow that can be seen under ultraviolet lights. Robotic engineers can work in animatronics where they design and build robots for entertainment, like the ones you see in theme parks. Inspire curiosity and a lifelong love of science with this mind-boggling book of engineering for kids.

**Handbook of Chemical Engineering Calculations** Princeton University Press

Beginning in the early 2000s, there was an upsurge of national concern over the state of the science and engineering job market that sparked a plethora of studies, commission reports, and a presidential initiative, all stressing the importance of maintaining American competitiveness in these fields. *Science and Engineering Careers in the United States* is the first major academic study to probe the issues that underlie these concerns. This volume provides new information on the economics of the postgraduate science and engineering job market, addressing such topics as the factors that determine the supply of PhDs, the career paths they follow after graduation, and the creation and use of knowledge as it is reflected by the amount of papers and patents produced. A distinguished team of contributors also explores the tensions between industry and academe in recruiting graduates, the influx of foreign-born doctorates, and the success of female doctorates. *Science and Engineering Careers in the United States* will raise new questions about stimulating innovation and growth in the American economy.

**MATERIALS SCIENCE AND ENGINEERING** Cambridge University Press

Even bad code can function. But if code isn’t clean, it can bring a development organization to its knees. Every year, countless hours and significant resources are lost because of poorly written code. But it doesn’t have to be that way. Noted software expert Robert C. Martin presents a revolutionary paradigm with *Clean Code: A Handbook of Agile Software Craftsmanship*. Martin has teamed up with his colleagues from Object Mentor to distill their best agile practice of cleaning code “on the fly” into a book that will instill within you the values of a software craftsman and make you a better programmer—but only if you work at it. What kind of work will you be doing? You’ll be reading code—lots of code. And you will be challenged to think about what’s right about that code, and what’s wrong with it. More importantly, you will be challenged to reassess your professional values and your commitment to your craft. *Clean Code* is divided into three parts. The first describes the principles, patterns, and practices of writing clean code. The second part consists of several case studies of increasing complexity. Each case study is an exercise in cleaning up code—of transforming a code base that has some problems into one that is sound and efficient. The third part is the payoff: a single chapter containing a list of heuristics and “smells” gathered while creating the case studies. The result is a knowledge base that describes the way we think when we write, read, and clean code. Readers will come away from this book understanding How to tell the difference between good and bad code How to write good code and how to transform bad code into good code How to create good names, good functions, good objects, and good classes How to format code for maximum readability How to implement complete error handling without obscuring code logic How to unit test and practice test-driven development This book is a must for any developer, software engineer, project manager, team lead, or systems analyst with an interest in producing better code.

**The Book of Totally Irresponsible Science** National Geographic Books

*Science for Engineering* offers an introductory textbook for students of engineering science and assumes no prior background in engineering. John Bird focuses upon examples rather than theory, enabling students to develop a sound understanding of engineering systems in terms of the basic laws and principles. This book includes over 580 worked examples, 1300 further problems, 425 multiple choice questions (with answers), and contains sections covering the mathematics that students will require within their engineering studies, mechanical applications, electrical applications and engineering systems. This new edition of *Science for Engineering* covers the fundamental scientific knowledge that all trainee engineers must acquire in order to pass their exams. It has also been brought fully in line with the compulsory science and mathematics units in the new engineering course specifications. Supported by free lecturer materials that can be found at [www.routledge/cw/bird](http://www.routledge/cw/bird) This resource includes full worked solutions of all 1300 of the further problems for lecturers/instructors use, and the full solutions and marking scheme for the fifteen revision tests. In addition, all illustrations will be available for downloading.