

In the lifetimes of the authors, the world and especially the United States have received three significant “wake-up calls” on energy production and consumption. The first of these occurred on October 15, 1973 when the Yom Kippur War began with an attack by Syria and Egypt on Israel. The United States and many western countries supported Israel. Because of the western support of Israel, several Arab oil exporting nations imposed an oil embargo on the west. These nations withheld five million barrels of oil per day. Other countries made up about one million barrels of oil per day but the net loss of four million barrels of oil production per day extended through March of 1974. This represented 7% of the free world’s (i. e. , excluding the USSR) oil production. In 1972 the price of crude oil was about \$3. 00 per barrel and by the end of 1974 the price of oil had risen by a factor of 4 to over \$12. 00. This resulted in one of the worst recessions in the post World War II era. As a result, there was a movement in the United States to become energy independent. At that time the United States imported about one third of its oil (about five million barrels per day). After the embargo was lifted, the world chose to ignore the “wake-up call” and went on with business as usual.

Delivers a comprehensive textbook for a single-semester course in engineering economics/engineering economy for undergraduate engineering students.

The Managing Change is to introduce the tools, techniques and methodologies, deemed appropriate to identifying, documenting and otherwise managing change that have been identified as being “best tested and proven” practices and which have been found to work on “most projects, most of the time”; provide a logical or rational sequence showing when those tools or techniques would normally and customarily be used and in selected instances, show how to use those tools/techniques and/or where to find additional information on how to use or apply them.

Designed as a textbook for undergraduate students in various engineering disciplines—Mechanical, Civil, Industrial Engineering, Electronics Engineer-ing and Computer Science—and for postgraduate students in Industrial Engineering and Water Resource Management, this comprehensive and well-organized book, now in its Second Edition, shows how complex economic decisions can be made from a number of given alternatives. It provides the managers not only a sound basis but also a clear-cut approach to making decisions. These decisions will ultimately result in minimizing costs and/or maximizing benefits. What is more, the book adequately illustrates the concepts with numerical problems and Indian cases. While retaining all the chapters of the previous edition, the book adds a number of topics to make it more comprehensive and more student friendly. What’s New to This Edition • Discusses different types of costs such as average cost, recurring cost, and life cycle cost. • Deals with different types of cost estimating models, index numbers and capital allowance. • Covers the basics of nondeterministic decision making. • Describes the meaning of cash flows with probability distributions and decision making, and selection of alternatives using simulation. • Discusses the basic concepts of Accounting. This book, which is profusely illustrated with worked-out examples and a number of diagrams and tables, should prove extremely useful not only as a text but also as a reference for those offering courses in such areas as Project Management, Production Management, and Financial Management.

The Empress Zoe, ruthless and cruel, rules the eastern Mediterranean. To fight her battles, she employs an army of Vikings - the most fearsome warriors of their time. Led by the legendary Harald Hardrada, these mercenaries will do whatever it takes to win. Hiding in their

ranks is Solveig - a fifteen-year-old girl. Amid the excitement and danger of combat, she must face terrible truths about the brutality of her people - and of her father. And, in the end, she will have to choose between all she holds dear, and what she believes is right. An epic adventure about Vikings and Saracens, ship battles and land-raids, loyalty and sacrifice.

The Routledge Handbook of Transportation offers a current and comprehensive survey of transportation planning and engineering research. It provides a step-by-step introduction to research related to traffic engineering and control, transportation planning, and performance measurement and evaluation of transportation alternatives. The Handbook of Transportation demonstrates models and methods for predicting travel and freight demand, planning future transportation networks, and developing traffic control systems. Readers will learn how to use various engineering concepts and approaches to make future transportation safer, more efficient, and more sustainable. Edited by Dušan Teodorović and featuring 29 chapters from more than 50 leading global experts, with more than 200 illustrations, the Routledge Handbook of Transportation is designed as an invaluable resource for professionals and students in transportation planning and engineering.

Offers coverage of each important step in engineering cost control process, from project justification to life-cycle costs. The book describes cost control systems and shows how to apply the principles of value engineering. It explains estimating methodology and the estimation of engineering, engineering equipment, and construction and labour costs
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Tugas keseharian para sarjana teknik dan engineer/insinyur dalam mengembangkan dan mencari berbagai cara untuk meningkatkan taraf hidup dan kesejahteraan umat manusia, antara lain dengan perancangan, pembuatan atau pembangunan, dan pengoperasian berbagai alat atau barang, bangunan, instalasi, dan sistem lainnya sesuai dengan bidang kerja masing-masing sarjana teknik dan insinyur. Dalam kenyataan di lapangan, para sarjana teknik dan insinyur teknik tidak dapat merealisasikan hasil rancangannya untuk diwujudkan menjadi alat atau barang, bangunan, instalasi, atau sistem lainnya jika dari kajian ditunjukkan bahwa rancangan tersebut tidak layak secara ekonomi. Oleh karena itu, para mahasiswa di bidang teknik perlu belajar ilmu ekonomi, terutama ilmu ekonomi yang berkaitan dengan bidang teknik. Buku ini ditulis dengan tujuan untuk menyediakan buku kuliah Ekonomi Teknik bagi mahasiswa bidang teknik, terutama mahasiswa di bidang Teknik Kimia. Buku ini juga dapat digunakan oleh para dosen bidang Ekonomi Teknik dalam menyiapkan materi kuliahnya. Para lulusan Departemen Teknik Kimia diharapkan dapat menggunakan buku ini sebagai referensi dalam penyelesaian persoalan terkait dengan perekonomian di tempat kerjanya. Buku ini disusun dalam 15 bab dengan urutan yang runtut agar para pembaca mudah dalam mempelajarinya. Bab 1 menguraikan nilai uang atas waktu, meliputi arus kas, ekuivalensi ekonomi, bunga, berbagai jenis pembayaran dan penerimaan, dan ringkasan bentuk-bentuk faktor bunga. Setelah para pembaca memahami konsep nilai uang atas waktu, kemudian di Bab 2 disajikan pembahasan tentang inflasi dan deflasi, meliputi pengertian dan penyebab inflasi dan deflasi, indeks harga konsumen (IHK), dan perhitungan inflasi menggunakan IHK. Setelah itu, untuk memberikan pemahaman bagi para pembaca terkait penyusutan nilai aset, baik aset yang berwujud maupun tidak berwujud, pada Bab 3 dibahas tentang depresiasi, depleksi, dan amortisasi. Dalam kegiatan ekonomi, perpajakan merupakan hal penting yang harus diketahui oleh para pelaku ekonomi. Maka, Bab 4 buku ini memuat uraian tentang pajak penghasilan, meliputi subjek, objek, dan tarif pajak penghasilan. Dalam banyak kesempatan, seorang investor harus memilih alternatif investasi yang paling menarik secara ekonomi dari beberapa peluang investasi yang ada. Adakalanya sebuah industri dalam melakukan pembelian peralatan pabrik harus memilih alat yang paling ekonomis di antara beberapa alternatif alat yang tersedia di pasaran. Oleh karena itu, Bab 5 buku ini menyajikan perbandingan dan pemilihan rencana investasi dengan metode analisis nilai sekarang dan

analisis nilai tahunan. Bab 6 sampai dengan Bab 13 buku ini mengajak para pembaca untuk memahami secara terperinci seluk-beluk perhitungan modal investasi pendirian pabrik dan biaya pengoperasian pabrik, perhitungan keuntungan dari penjualan produk, dan pemahaman variabel-variabel yang berpengaruh terhadap biaya dan keuntungan, serta analisis sensitivitas. Secara terperinci, perhitungan modal investasi untuk pendirian pabrik dibahas pada Bab 6, biaya fisik pabrik berupa peralatan dituangkan pada Bab 7, biaya fisik pabrik yang berupa komponen selain peralatan diuraikan pada Bab 8, biaya produksi disajikan pada Bab 9, pengeluaran-pengeluaran umum diterangkan pada Bab 10, penjualan produk dan keuntungan pabrik dijelaskan pada Bab 11, variabel-variabel yang berpengaruh terhadap biaya dan keuntungan dibahas pada Bab 12, dan analisis sensitivitas dijelaskan secara terperinci pada Bab 13. Setelah para pembaca mempelajari Bab 1 sampai dengan Bab 13, diharapkan dapat melakukan analisis ekonomi dari rencana usaha atau rencana pendirian pabrik baru. Oleh karena itu, pada Bab 14 disajikan evaluasi ekonomi pabrik kimia yang dalam hal ini diterangkan secara terperinci langkah-langkah evaluasi ekonomi terhadap rancangan pendirian pabrik asam sitrat dari tetes dengan kapasitas 9 ton/hari. Pada bab terakhir buku ini, yaitu Bab 15, disajikan soal-soal dan penyelesaiannya untuk berbagai jenis soal, dari yang sederhana hingga yang kompleks dengan maksud agar dapat mempermudah para pembaca dalam mempelajari dan memahami persoalan ekonomi teknik.

Engineering Economy is intended for use in undergraduate introductory courses in Engineering Economics Used by engineering students worldwide, this best-selling text provides a sound understanding of the principles, basic concepts, and methodology of engineering economy. Built upon the rich and time-tested teaching materials of earlier editions, it is extensively revised and updated to reflect current trends and issues, with an emphasis on the economics of engineering design throughout. It provides one of the most complete and up-to-date studies of this vitally important field. MyEngineeringLab for Engineering Economy is a total learning package that is designed to improve results through personalized learning. MyEngineeringLab is an online homework, tutorial, and assessment program that truly engages students in learning. It helps students better prepare for class, quizzes, and exams—resulting in better performance in the course—and provides educators a dynamic set of tools for gauging individual and class progress.

This ANSI standard represents the best current usage of industrial engineering terminology. An industry-wide reference, it is a revision of ANSI Z94.1989. More than 7,000 technical terms, diagrams, and calculations are classified, defined, and cross-referenced.

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Covering the prediction of outcomes for engineering decisions through regression analysis, this succinct and practical reference presents statistical reasoning and interpretational techniques to aid in the decision making process when faced with engineering problems. The author emphasizes the use of spreadsheet simulations and decision trees as important tools in the practical application of decision making analyses and models to improve real-world engineering operations. He offers insight into the realities of high-stakes engineering decision making in the investigative and corporate sectors by optimizing engineering decision variables to maximize payoff.

Introduction to Hazardous Waste Incineration, Second Edition The control of hazardous wastes is one of today's most critical environmental issues. Increasing numbers of engineers, technicians, and maintenance personnel are being confronted with problems

in this important area. Incineration has become an available and vital option to meet the new challenge of containing hazardous wastes. *Introduction to Hazardous Waste Incineration, Second Edition* provides a reference work that examines the basic concepts, principles, equipment, and applications pertaining to hazardous waste incineration. Uniquely serving as both an essential guidebook for practicing engineers and a text for engineering students, this new edition contains updated information in the area of standards and regulations, equipment, materials handling equipment, instrumentation, control performance testing, final permit, and facility design. The authors' aim is to offer the reader the fundamentals of incineration with appropriate practical application to the incineration of wastes, in addition to providing an introduction to the specialized literature in this and related areas. Complete with illustrative examples, this informative Second Edition highlights:

- * Recent history of standards and regulations, including the recently enacted MACT Standards for hazardous waste combustion
- * Incineration principles, including stoichiometric calculations, and thermochemical considerations
- * Equipment that may be found in a waste incineration facility (i.e., incinerator, waste heat boiler, quench systems, and air pollution control equipment)
- * Design principles and their application to a hazardous waste incineration facility
- * Practice problems at the end of each technical chapter

Introduction to Hazardous Waste Incineration, Second Edition offers chemical and environmental engineers working in the hazardous waste control area, as well as technicians and maintenance professionals, the necessary literature to cope with some of the complex problems encountered in waste incineration today.

Fuzzy set approaches are suitable to use when the modeling of human knowledge is necessary and when human evaluations are needed. Fuzzy set theory is recognized as an important problem modeling and solution technique. It has been studied extensively over the past 40 years. Most of the early interest in fuzzy set theory pertained to representing uncertainty in human cognitive processes. Fuzzy set theory is now applied to problems in engineering, business, medical and related health sciences, and the natural sciences. This book handles the fuzzy cases of classical engineering economics topics. It contains 15 original research and application chapters including different topics of fuzzy engineering economics. When no probabilities are available for states of nature, decisions are given under uncertainty. Fuzzy sets are a good tool for the operation research analyst facing uncertainty and subjectivity. The main purpose of the first chapter is to present the role and importance of fuzzy sets in the economic decision making problem with the literature review of the most recent advances.

“Process Plant Equipment Book is another great publication from Wiley as a reference book for final year students as well as those who will work or are working in chemical production plants and refinery...” -Associate Prof. Dr. Ramli Mat, Deputy Dean (Academic), Faculty of Chemical Engineering, Universiti Teknologi Malaysia “...give[s] readers access to both fundamental information on process plant equipment and to practical ideas, best practices and experiences of highly successful engineers from around the world... The book is illustrated throughout with numerous black & white photos and diagrams and also contains case studies demonstrating how actual process plants have implemented the tools and techniques discussed in the book. An extensive list of references enables readers to explore each individual topic in greater depth...”—Stainless Steel World and Valve World, November 2012 Discover how to

optimize process plant equipment, from selection to operation to troubleshooting. From energy to pharmaceuticals to food, the world depends on processing plants to manufacture the products that enable people to survive and flourish. With this book as their guide, readers have the information and practical guidelines needed to select, operate, maintain, control, and troubleshoot process plant equipment so that it is efficient, cost-effective, and reliable throughout its lifetime. Following the authors' careful explanations and instructions, readers will find that they are better able to reduce downtime and unscheduled shutdowns, streamline operations, and maximize the service life of processing equipment. *Process Plant Equipment: Operation, Control, and Reliability* is divided into three sections: Section One: Process Equipment Operations covers such key equipment as valves, pumps, cooling towers, conveyors, and storage tanks. Section Two: Process Plant Reliability sets forth a variety of tested and proven tools and methods to assess and ensure the reliability and mechanical integrity of process equipment, including failure analysis, Fitness-for-Service assessment, engineering economics for chemical processes, and process component function and performance criteria. Section Three: Process Measurement, Control, and Modeling examines flow meters, process control, and process modeling and simulation. Throughout the book, numerous photos and diagrams illustrate the operation and control of key process equipment. There are also case studies demonstrating how actual process plants have implemented the tools and techniques discussed in the book. At the end of each chapter, an extensive list of references enables readers to explore each individual topic in greater depth. In summary, this text offers students, process engineers, and plant managers the expertise and technical support needed to streamline and optimize the operation of process plant equipment, from its initial selection to operations to troubleshooting.

"The Traffic Engineering Handbook is a comprehensive practice-oriented reference that presents the fundamental concepts of traffic engineering, commensurate with the state of the practice"--

"Completely revised and edited throughout, this latest edition includes new chapters on creating green buildings and web-based building automation controls along with a comprehensive revision of the chapter on lighting. Written by three of the most respected energy professionals in the industry, this book examines the fundamental objectives of energy management and illustrates techniques and tools proven effective for achieving results. Topics include distributed generation, energy auditing, rate structures, and economic evaluation techniques as well as lighting efficiency improvement, HVAC optimization, combustion and use of industrial wastes, and steam generation and distribution system performance."--Publisher description.

The engineer's guide to economical decision-making *Engineering Economics* is an important subject for both aspiring and practicing engineers. As global competition increases, engineers are increasingly asked to analyze and monitor their processes and products, not only to ascertain their level of quality but their cost-effectiveness as well. It is imperative to know the scientific and engineering principles of design work and decision-making in a world where technology is constantly evolving. *Kleinfeld's Engineering Economics: Analysis for Evaluation of Alternatives* offers students, professors, and professionals guidance for making smart, economical decisions when it comes to design and manufacturing.

In addition, the book explains how to solve a wide range of typical problems, exploit the potential of information systems, reduce damage and loss, and improve warehouse safety. A practical, step-by-step guide to total systems management *Systems Engineering*

Management, Fifth Edition is a practical guide to the tools and methodologies used in the field. Using a "total systems management" approach, this book covers everything from initial establishment to system retirement, including design and development, testing, production, operations, maintenance, and support. This new edition has been fully updated to reflect the latest tools and best practices, and includes rich discussion on computer-based modeling and hardware and software systems integration. New case studies illustrate real-world application on both large- and small-scale systems in a variety of industries, and the companion website provides access to bonus case studies and helpful review checklists. The provided instructor's manual eases classroom integration, and updated end-of-chapter questions help reinforce the material. The challenges faced by system engineers are candidly addressed, with full guidance toward the tools they use daily to reduce costs and increase efficiency. System Engineering Management integrates industrial engineering, project management, and leadership skills into a unique emerging field. This book unifies these different skill sets into a single step-by-step approach that produces a well-rounded systems engineering management framework. Learn the total systems lifecycle with real-world applications Explore cutting edge design methods and technology Integrate software and hardware systems for total SEM Learn the critical IT principles that lead to robust systems Successful systems engineering managers must be capable of leading teams to produce systems that are robust, high-quality, supportable, cost effective, and responsive. Skilled, knowledgeable professionals are in demand across engineering fields, but also in industries as diverse as healthcare and communications. Systems Engineering Management, Fifth Edition provides practical, invaluable guidance for a nuanced field.

This exceptional guidebook provides the strategies necessary to curtail ergonomic losses and costs associated with spiraling worker's compensation premiums and medical expenses, of major concern in all businesses. Ergonomic Process Management is meant to be an application and implementation "operator's manual". This one-of-a-kind resource provides professionals and students with step-by-step guidance on the management and behavior modification principles necessary to successfully implement ergonomic science and technology into the real world occupational environment.

A completely revised and updated edition of a bestseller, Maintenance, Replacement, and Reliability: Theory and Applications, Second Edition supplies the tools needed for making data-driven physical asset management decisions. The well-received first edition quickly became a mainstay for professors, students, and professionals, with its clear pre

A new edition of the widely-used engineering economics text. Employs a cash-flow approach to economic theory and prepares the reader to systematically perform economic justification of capital investments in a real-world setting. Stresses learning by example, with real-life cases. Updated and revised to reflect current practice, covering before- and after-tax analyses, and cost of capital, including the effects of inflation on capital investment, public sector economics. ????:Software engineering economics

Engineering Economy, 15e, is ideal for undergraduate, introductory courses in Engineering Economics. It also is a useful reference for engineers interested in reviewing the basic principles of engineering economy. Used by engineering students worldwide, this best-selling text provides a sound understanding of the principles, basic concepts, and methodology of engineering economy. Built upon the rich and time-tested teaching materials of earlier editions, it is extensively revised and updated to reflect current trends and issues, with an emphasis on the economics of engineering design throughout. It provides one of the most complete and up-to-date studies of this vitally important field.

The book analyzes, compares, and contrasts tools and techniques used in risk management at corporate, strategic business and project level and develops a risk management mechanism for the sequencing of risk assessment through corporate, strategic and project stages of an

investment in order to meet the requirements of the 1999 Turnbull report. By classifying and categorizing risk within these levels it is possible to drill down and roll-up to any level of the organizational structure and to establish the risks that each project is most sensitive to, so that appropriate risk response strategies may be implemented to benefit all stakeholders. "The new edition of this book provides a clear insight into the intricacies of corporate risk management and the addition of the case study exemplars aids understanding of the management of multiple projects in the real world." —Professor Nigel Smith, Head of the School of Civil Engineering, University of Leeds

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