

Engineering Economics And Cost Estimation

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ENGINEERING ECONOMICS AND COSTING CRC Press

Although technology and productivity has changed much of engineering, many topics are still taught in very similarly to how they were taught in the 70s. Using a new approach to engineering economics, *Systems Life Cycle Costing: Economic Analysis, Estimation, and Management* presents the material that a modern engineer must understand to work as a practicing engineer conducting economic analysis. Organized around a product development process that provides a framework for the material, the book presents techniques such as engineering economics and simulation-based costing (SBC), with a focus on total life cycle understanding and perspective and introduces techniques for detailed analysis of modern complex systems. The author includes rules of thumb for estimation grouped with the methods, processes, and tools (MPTs) for conducting a detailed engineering buildup for costing. He presents the estimating costing of complex systems and software and then explores concepts such as design to cost (DTC), cost as an independent variable (CAIV), the role of commercial off-the-shelf technology, cost of quality, and the role of project management in LCC management. No product or services are immune from cost, performance, schedule, quality, risks, and tradeoffs. Yet engineers spend most of their formal education focused on performance and most of their professional careers worrying about resources and schedule. Too often, the design stage becomes about the technical performance without considering the downstream costs that contribute to the total life cycle costs (LCC) of a system. This text presents the methods, processes, and tools needed for the economic analysis, estimation, and management that bring these costs in line with the goals of pleasing the customer and staying within budget.

Production Economics John Wiley & Sons Incorporated

For all engineers and practitioners, it is essential to have a fundamental understanding of cost structure, estimating cash flows, and evaluating alternative projects and designs on an economic basis. *Engineering Economics for Aviation and Aerospace* provides the tools and techniques necessary for engineers to economically evaluate their projects and choices. The focus of this book is on a comprehensive understanding of the theory and practical applications of engineering economics. It explains and demonstrates the principles and techniques of engineering economics and financial analysis as applied to the aviation and aerospace industries. Time value of money, interest factors, and spreadsheet functions are used to evaluate the cash flows associated with a single project or multiple projects. The alternative engineering economics tools and techniques are utilized in separate chapters to evaluate the attractiveness of a single project or to select the best of multiple alternatives. Most of the engineering economics and financial mathematics books available in the market take either a pure theoretical approach or offer limited applications. This book incorporates both approaches, providing students of aviation and industrial economics, as well as practitioners, with the necessary mathematical knowledge to evaluate alternatives on an economic basis.

A Project-Based Introduction CRC Press

The Economics of Information Systems and Software focuses on the economic aspects of information systems and software, including advertising, evaluation of information systems, and software maintenance. The book first elaborates on value and values, software business, and scientific information as an economic category. Discussions focus on information products and information services, special economic properties of information, culture and convergence, hardware and software products, materiality and consumption, technological progress, and software flexibility. The text then takes a look at advertising to finance software, perspectives on East-West relations in economics and information, and evaluation of information systems. Topics include research on information systems, knowledge on Eastern European information services, GDR information institutes, local databases, GDR databases, CMEA directions, and theoretical propositions. The manuscript reviews software reuse, software methodology in the harsh light of economics, quantitative aspects of software maintenance management, and calibrating a software cost-estimation model. Concerns cover the need for calibration, measuring maintainability, prognosis of maintenance effort, object-oriented programming, metaprogramming, and software quality and reuse. The text is a dependable reference for computer science experts and researchers wanting to explore further the economics of information systems and software.

Methods and Tools CRC Press

This is the most authoritative archive of Barry Boehm's contributions to software engineering. Featuring 42 reprinted articles, along with an introduction and chapter summaries to provide context, it serves as a "how-to" reference manual for software engineering best practices. It provides convenient access to Boehm's landmark work on product development and management processes. The book concludes with an insightful look to the future by Dr. Boehm.

Engineering Economics of Life Cycle Cost Analysis Springer Science & Business Media

This comprehensive yet accessible text emphasizes problem solving, evaluation of projects, capital budgeting and resource allocation under risk and uncertainty. Current theory of economics and finance is also discussed and the text is complemented by a full set of problems, exercises and case studies.

Chemical Engineering Economics McGraw-Hill College

Engineering Economic and Cost Analysis is a practical introduction for those engineering students and professional practitioners who are new to the study of engineering economics.

Engineering Economics for Aviation and Aerospace Routledge

The fourth edition of this text continues to be a comprehensive, authoritative and interesting resource for introductory and advanced courses in Engineering Economics. This new edition has streamlined the material into 15 accessible, readable chapters. The sequence of chapters flows through: 1) Fundamentals required for economic analysis; 2) Structural/procedures for performing those analyses; 3) Specific considerations for the public sector; 4) Depreciation and income tax considerations; 5) Inflation/considerations; and 6) Advanced concepts, including risk and decision. An emphasis on a clear, interesting writing style with numerous examples and review exercises offsets traditional ideas that the subject matter can be dull.

Evaluating Costs of Operations in Manufacturing and Service Industries PHI Learning Pvt. Ltd.

Salient Features of the Book: Simple and lucid language Sequential arrangement of topics Review question after each chapter Interest calculation table Straight answers to 101 nagging questions

Engineering Economics and Costing World Scientific

Marine Engineering Economics and Cost Analysis is intended for students and practitioners of ship design, shipbuilding, and ship operations who want to understand and apply the concepts of engineering economics to routine engineering decisions. Computer software is included to aid in completing the analyses required. "To my knowledge this is the first text published during my fifty-year career...that deals with the methods of economic evaluation of maritime decision alternatives from an engineering viewpoint...This book applies engineering economics and cost analysis to the maritime industry and sets forth in a logical sequence the method to reach the most efficient vessel from both a cost and capacity-required approach."--from the foreword by Captain Warren G. Leback, former maritime administrator.

The Economics of Information Systems and Software Oxford University Press

Praised for its accessible tone and extensive problem sets, this trusted text familiarizes students with the universal principles of engineering economics. This essential introduction features a wealth of specific Canadian examples and has been fully updated with new coverage of inflation and environmental stewardship as well as a new chapter on project management.

Engineering Economics Prentice Hall

For all engineers and practitioners, it is essential to have a fundamental understanding of cost structure, estimating cash flows, and evaluating alternative projects and designs on an economic basis. *Engineering Economics for Aviation and Aerospace* provides the tools and techniques necessary for engineers to economically evaluate their projects and choices. The focus of this book is on a comprehensive understanding of the theory and practical applications of engineering economics. It explains and demonstrates the principles and techniques of engineering economics and financial analysis as applied to the aviation and aerospace industries. Time value of money, interest factors, and spreadsheet functions are used to evaluate the cash flows associated with a single project or multiple projects. The alternative engineering economics tools and techniques are utilized in separate chapters to evaluate the attractiveness of a single project or to select the best of multiple alternatives. Most of the engineering economics and financial mathematics books available in the market take either a pure theoretical approach or offer limited applications. This book incorporates both approaches, providing students of aviation and industrial economics, as well as practitioners, with the necessary mathematical knowledge to evaluate alternatives on an economic basis.

Engineering Economics of Life Cycle Cost Analysis Springer Science & Business Media

This volume presents a selection of the presentations from the first annual conference on Analytical Methods in Software Engineering Economics held at The MITRE Corporation in McLean, Virginia. The papers are representative of the issues that are of interest to researchers in the economics of information systems and software engineering economics. The 1990s are presenting software economists with a particularly difficult set of challenges. Because of budget considerations, the number of large new software development efforts is declining. The primary focus has shifted to issues relating to upgrading and migrating existing systems. In this environment, productivity enhancing methodologies and tools are of primary interest. The MITRE Software Engineering Analysis Conference was designed to address some of the new and difficult challenges that face our profession. The primary objective of the conference was to address new theoretical and applications directions in Software Engineering Economics, a relatively new discipline that deals with the management and control of all segments of the software life-cycle. The discipline has received much visibility in the last twenty-five years because of the size and cost considerations of many software development and maintenance efforts, particularly in the Federal Government. We thank everyone who helped make this conference a success, especially those who graciously allowed us to include their work in this volume.

Balancing Technology and Declining Budgets Springer Science & Business Media

Understanding the cost ramifications of design, manufacturing and life-cycle management decisions is of central importance to businesses associated with all types of electronic systems. *Cost Analysis of Electronic Systems* contains carefully developed models and theory that practicing engineers can directly apply to the modeling of costs for real products and systems. In addition, this book brings to light and models many contributions to life-cycle costs that practitioners are aware of but never had the tools or techniques to address quantitatively in the past. *Cost Analysis of Electronic Systems* melds elements of traditional engineering economics with manufacturing process and life-cycle cost management concepts to form

a practical foundation for predicting the cost of electronic products and systems. Various manufacturing cost analysis methods are addressed including: process-flow, parametric, cost of ownership, and activity-based costing. The effects of learning curves, data uncertainty, test and rework processes, and defects are considered. Aspects of system sustainment and life-cycle cost modeling including reliability (warranty, burn-in), maintenance (sparing and availability), and obsolescence are treated. Finally, total cost of ownership of systems and return on investment are addressed. Real life design scenarios from integrated circuit fabrication, electronic systems assembly, substrate fabrication, and electronic systems management are used as examples of the application of the cost estimation methods developed within the book.

Economic and Financial Analysis for Engineering and Project Management John Wiley & Sons

Software Engineering Economics is an invaluable guide to determining software costs, applying the fundamental concepts of microeconomics to software engineering, and utilizing economic analysis in software engineering decision making.

Engineering Economics and Economic Design for Process Engineers CRC Press

Presents an accessible approach to the cost estimation tools, concepts, and techniques needed to support analytical and cost decisions. Written with an easy-to-understand approach, Cost Estimation: Methods and Tools provides comprehensive coverage of the quantitative techniques needed by professional cost estimators and for those wanting to learn about this vibrant career field. Featuring the underlying mathematical and analytical principles of cost estimation, the book focuses on the tools and methods used to predict the research and development, production, and operating and support costs for successful cost estimation in industrial, business, and manufacturing processes. The book begins with a detailed historical perspective and key terms of the cost estimating field in order to develop the necessary background prior to implementing the presented quantitative methods. The book proceeds to fundamental cost estimation methods utilized in the field of cost estimation, including working with inflation indices, regression analysis, learning curves, analogies, cost factors, and wrap rates. With a step-by-step introduction to the practicality of cost estimation and the available resources for obtaining relevant data, Cost Estimation: Methods and Tools also features: Various cost estimating tools, concepts, and techniques needed to support business decisions Multiple questions at the end of each chapter to help readers obtain a deeper understanding of the discussed methods and techniques An overview of the software used in cost estimation, as well as an introduction to the application of risk and uncertainty analysis A Foreword from Dr. Douglas A. Brook, a professor in the Graduate School of Business and Public Policy at the Naval Postgraduate School, who spent many years working in the Department of Defense acquisition environment Cost Estimation: Methods and Tools is an excellent reference for academics and practitioners in decision science, operations research, operations management, business, and systems and industrial engineering, as well as a useful guide in support of professional cost estimation training and certification courses for practitioners. The book is also appropriate for graduate-level courses in operations research, operations management, engineering economics, and manufacturing and/or production processes.

Engineering Managerial Economic Decision and Risk Analysis Prentice Hall

This book explains the basic and advanced aspects of engineering economics, cost estimating, cost control, cost forecasting, and planning and scheduling. It is intended for engineers, architects, and managers involved in or planning to be involved in engineering and construction projects.

Barry W. Boehm's Lifetime Contributions to Software Development, Management, and Research CRC Press

This book directs the engineering manager or the undergraduate student preparing to become an engineering manager, who is or will become actively engaged in the management of economic-risk trade-off decisions for engineering investments within an organizational system. In today's global economy, this may mean managing the economic risks of engineering investments across national boundaries in international organizations, government, or service organizations. As such, this is an applied book. The book's goal is to provide an easy to understand, up to date, and coherent treatment of the management of the economic-risk trade-offs of engineering investments. This book accomplishes this goal by cumulatively sequencing knowledge content from foundational economic and accounting concepts to cost estimating to the traditional engineering economics knowledge culminating in fundamental engineering managerial economic decision-making incorporating risk into engineering management economic decisions.

Engineering Economics and Costing Elsevier

The book treats the C-hydrocarbons and their secondary products as a contribution 4 to chemical engineering economics, applying this field of teaching and research to the technical processes for making and processing this group of products, so important to the chemical industry. As early as the 1950s the then director of the Institute for Technical Chemistry of the Berlin Technical University, Professor Herbert Kolbel, took the initiative in the domain of Chemical Engineering Economics and began systematic studies of Project Engineering and Cost Estimation in connection with chemical plants. He also started a course on technical chemical processes in 1966. Properties, production procedures, plant equipment, and also the uses of technically interesting products are the central features of Chemical Technology. The information is to be found in the large encyclopedias of Technical Chemistry. On the other hand, Chemical Engineering Economics deals with all the economic conditions of usage of the raw materials, possibilities of utilizing co-products, and the integration of these products into definite production programmes, from the stand point of the chemical and technical fundamentals of the processes. Further important viewpoints are the costs of the products, taking into consideration important and variable influences on these costs, the situation and development of the market for the products and, of increasing significance, also the ecological global conditions for procuring raw materials and the production and marketing of the particular products.

Software Engineering Economics and Declining Budgets Butterworth-Heinemann

Engineering has changed dramatically in the last century. With modern computing systems, instantaneous communication, elimination of low/mid management, increased complexity, and extremely efficient supply chains, all have dramatically affected the responsibilities of engineers at all levels. The future will require cost effective systems that are more secure, interconnected, software centric, and complex. Employees at all levels need to be able to develop accurate cost estimates based upon defensible cost analysis. It is under this backdrop that this book is being written. By presenting the methods, processes, and tools needed to conduct cost analysis, estimation, and management of complex systems, this textbook is the next step beyond basic engineering economics. Features Focuses on systems life cycle costing Includes materials beyond basic engineering economics, such as simulation-based costing Presents cost estimating, analysis, and management from a total ownership cost perspective Offers numerous real-life examples Provides excel based textbook/problems Offers PowerPoint slides, Solutions Manual, and author website with downloadable excel solutions, etc.

Estimating and Costing for the Metal Manufacturing Industries Cornell Maritime Press/Tidewater Publishers

This complete revision of Applied Process Design for Chemical and Petrochemical Plants, Volume 1 builds upon Ernest E. Ludwig's classic text to further enhance its use as a chemical engineering process design manual of methods and proven fundamentals. This new edition includes important supplemental mechanical and related data, nomographs and charts. Also included within are improved techniques and fundamental methodologies, to guide the engineer in designing process equipment and applying chemical processes to properly detailed equipment. All three volumes of Applied Process Design for Chemical and Petrochemical Plants serve the practicing engineer by providing organized design procedures, details on the equipment suitable for application selection, and charts in readily usable form. Process engineers, designers, and operators will find more chemical petrochemical plant design data in: Volume 2, Third Edition, which covers distillation and packed towers as well as material on azeotropes and ideal/non-ideal systems. Volume 3, Third Edition, which covers heat transfer, refrigeration systems, compression surge drums, and mechanical drivers. A. Kayode Coker, is Chairman of Chemical & Process Engineering Technology department at Jubail Industrial College in Saudi Arabia. He's both a chartered scientist and a chartered chemical engineer for more than 15 years. and an author of Fortran Programs for Chemical Process Design, Analysis and Simulation, Gulf Publishing Co., and Modeling of Chemical Kinetics and Reactor Design, Butterworth-Heinemann. Provides improved design manuals for methods and proven fundamentals of process design with related data and charts Covers a complete range of basic day-to-day petrochemical operation topics with new material on significant industry changes since 1995.