

Product Design And Development

Packaging Research in Food Product Design and Development is the first book to comprehensively address the issues of graphics design and visual concepts, from a systematic, scientific viewpoint, yet with business applications in mind. Positioned specifically for foods and beverages, Packaging Research in Food Product Design and Development uniquely combines consumer liking, segmentation and “how to” business methodology with a detailed treatment of the different facets of concept research.

"The P-51 Mustang—perhaps the finest piston engine fighter ever built—was designed and put into flight in just a few months. Specifications were finalized on March 15, 1940; the airfoil prototype was complete on September 9; and the aircraft made its maiden flight on October 26. Now that is a lean development process!" —Allen Ward and Durward Sobek, commenting on the development of the P-51 Mustang and its exemplary use of trade-off curves. Shingo Research and Professional Publication Award recipient, 2008 Despite attempts to interpret and apply lean product development techniques, companies still struggle with design quality problems, long lead times, and high development costs. To be successful, lean product development must go beyond techniques, technologies, conventional concurrent engineering methods, standardized engineering work, and heavyweight project managers. Allen Ward showed the way. In a truly groundbreaking first edition of Lean Product and Process Development, Ward delivered -- with passion and penetrating insights that cannot be found elsewhere -- a comprehensive view of lean principles for developing and sustaining product and process development. In the second edition, Durward Sobek, professor of Mechanical and Industrial Engineering at Montana State University—and one of Ward's premier students—edits and reorganizes the original text to make it more accessible and actionable. This new edition builds on the first one by: Adding five in-depth and inspiring case studies. Including insightful new examples and illustrations. Updating concepts and tools based on recent developments in product development. Expanding the discussion around the critical concept of set-based concurrent engineering. Adding a more detailed table of contents and an index to make the book more accessible and user-friendly. The True Purpose of Product Development Ward's core thesis is that the very aim of the product development process is to create profitable operational value streams, and that the key to doing so predictably, efficiently, and effectively is to create useable knowledge. Creating useable knowledge requires learning, so Ward also creates a basic learning model for development. But Ward not only describes the technical tools needed to make lean product and process development actually work. He also delineates the management system, management behaviors, and mental models needed. In this breakthrough text, Ward: Asks fundamental questions about the purpose and “value added” in product development so you gain a crystal clear understanding of essential issues. Shows you how to find the most common forms of “knowledge waste” that plagues product development. Identifies four “cornerstones” of lean product development gleaned from the practices of successful companies like Toyota and its partners, and explains how they differ from conventional practices. Gives you specific, practical recommendations for establishing your own lean development processes. Melds observations of effective teamwork from his military background, engineering fundamentals from his education and personal experience, design methodology from his research, and theories about management and learning from his study of history and experiences with customers. Changes your thinking forever about product development.

Today's fast-paced manufacturing culture demands a handbook that provides how-to, no-holds-barred, no-frills information. Completely revised and updated, the Handbook of Manufacturing Engineering is now presented in four volumes. Keeping the same general format as the first edition, this second edition not only provides more information but makes it more accessible.

Each individual volume narrows the focus while broadening the coverage, giving you immediate access to the information you need. Volume One, Product Design and Factory Development reveals how human factors deeply affect productivity in the workplace and why the modern manufacturing engineer must be well versed in these areas. Edited by Richard Crowson with contributions from experts in each field, the book considers historical data for anthropometry and explores the impact of injuries, product liability, and low productivity on product cost. The book sequentially outlines the basic concepts of reliability theory in six chapters along with commonly used statistical methods for evaluating component reliability. It covers rapid prototyping, explores the machine debugging and troubleshooting process, and devotes an entire chapter to computers and controllers. The challenges presented by the fiercely technical world we live and work in are met by the manufacturing engineer. Companies can no longer afford to allow the manufacturing engineer to learn on the job. Therefore, the manufacturing engineer must gain as much knowledge from as many credible sources as possible. Covering the global picture of manufacturing, this book shows you how to successfully apply manufacturing engineering skills on the job.

Covers a widespread view of Quality by Design (QbD) encompassing the many stages involved in the development of a new drug product. The book provides a broad view of Quality by Design (QbD) and shows how QbD concepts and analysis facilitate the development and manufacture of high quality products. QbD is seen as a framework for building process understanding, for implementing robust and effective manufacturing processes and provides the underpinnings for a science-based regulation of the pharmaceutical industry. Edited by the three renowned researchers in the field, Comprehensive Quality by Design for Pharmaceutical Product Development and Manufacture guides pharmaceutical engineers and scientists involved in product and process development, as well as teachers, on how to utilize QbD practices and applications effectively while complying with government regulations. The material is divided into three main sections: the first six chapters address the role of key technologies, including process modeling, process analytical technology, automated process control and statistical methodology in supporting QbD and establishing the associated design space. The second section consisting of seven chapters present a range of thoroughly developed case studies in which the tools and methodologies discussed in the first section are used to support specific drug substance and drug-product QbD related developments. The last section discussed the needs for integrated tools and reviews the status of information technology tools available for systematic data and knowledge management to support QbD and related activities. Highlights Demonstrates Quality by Design (QbD) concepts through concrete detailed industrial case studies involving of the use of best practices and assessment of regulatory implications Chapters are devoted to applications of QbD methodology in three main processing sectors—drug substance process development, oral drug product manufacture, parenteral product processing, and solid-liquid processing Reviews the spectrum of process model types and their relevance, the range of state-of-the-art real-time monitoring tools and chemometrics, and alternative automatic process control strategies and methods for both batch and continuous processes The role of the design space is demonstrated through specific examples and the importance of understanding the risk management aspects of design space definition is highlighted Comprehensive Quality by Design for Pharmaceutical Product Development and Manufacture is an ideal book for practitioners, researchers, and graduate students involved in the development, research, or studying of a new drug and its associated manufacturing process.

Introduction to Product Design and Development for Engineers provides guidelines and best practices for the design, development, and evaluation of engineered products. Created to serve fourth year undergraduate students in Engineering Design modules with a required project, the text covers the entire product design process and product life-cycle, from the initial

concept to the design and development stages, and through to product testing, design documentation, manufacturability, marketing, and sustainability. Reflecting the author's long career as a design engineer, this text will also serve as a practical guide for students working on their capstone design projects.

In recent years the increased awareness of environmental issues has led to the development of new approaches to product design, known as Design for Environment and Life Cycle Design. Although still considered emerging and in some cases radical, their principles will become, by necessity, the wave of the future in design. A thorough exploration of the subject, *Product Design for the Environment: A Life Cycle Approach* presents key concepts, basic design frameworks and techniques, and practical applications. It identifies effective methods and tools for product design, stressing the environmental performance of products over their whole life cycle. After introducing the concepts of Sustainable Development, the authors discuss Industrial Ecology and Design for Environment as defined in the literature. They present the life cycle theory and approach, explore how to apply it, and define its main techniques. The book then covers the main premises of product design and development, delineating how to effectively integrate environmental aspects in modern product design. The authors pay particular attention to environmental strategies that can aid the achievement of the requisites of eco-efficiency in various phases of the product life cycle. They go on to explore how these strategies are closely related to the functional performance of the product and its components, and, therefore, to some aspects of conventional engineering design. The book also introduces phenomena of performance deterioration, together with principles of design for component durability, and methods for the assessment of residual life. Finally, the book defines entirely new methods and tools in relation to strategic issues of Life Cycle Design. Each theme provides an introduction to the problems and original proposals based on the authors' experience. The authors then discuss the implementation of these new concepts in design practice, differentiating between levels of intervention and demonstrating their use and effectiveness in specific case studies. The book not only presents evidence of the potential of the approach and methods proposed, but also analyzes some of the problems involved in developing eco-compatible products in the company context.

This book presents a series of high performance product design (PD) and development best practices that can create or improve product development organization. In contrast to other books that focus only on Toyota or other individual companies applying lean IPD, this book explains the lean philosophy more broadly and includes discussions of systems engineering, design for X (DFX), agile development, integrated product development, and project management. The "Lean Journey" proposed here takes a value-centric approach, where the lean principles are applied to PD to allow the tools and methods selected to emerge from observation of the individual characteristics of each enterprise. This means that understanding lean product development (LPD) is not about knowing which tools are available but knowing how to apply the philosophy. The book comes with an accompanying manual with problems and solutions available on Springer Extras.

Since the publication of the first edition of *Integrated Product and Process Design and Development: The Product Realization Process* more than a decade ago, the product realization process has undergone a number of significant changes. Reflecting these advances, this second edition presents a thorough treatment of the modern tools used in the integrated product realization process and places the product realization process in its new context. See what's new in the Second Edition: Bio-inspired concept generation and TRIZ Computing manufacturing cost, costs of ownership, and life-cycle costs of products Engineered plastics, ceramics, composites, and smart materials Role of innovation New manufacturing methods: in-mold assembly and layered manufacturing This book discusses how to translate customer needs into product requirements and specifications. It then provides methods to

determine a product's total costs, including cost of ownership, and covers how to generate and evaluate product concepts. The authors examine methods for turning product concepts into actual products by considering development steps such as materials and manufacturing processes selection, assembly methods, environmental aspects, reliability, and aesthetics, to name a few. They also introduce the design of experiments and the six sigma philosophy as means of attaining quality. To be globally viable, corporations need to produce innovative, visually appealing, quality products within shorter development times. Filled with checklists, guidelines, strategies, and examples, this book provides proven methods for creating competitively priced quality products.

Problems of Product Design and Development provides an elementary introduction to product design and development. Some of the topics discussed include an introduction to the kinds of design and production; initiation of a new product; function and use of designed products; design for production and maintenance; coordination of design; job description of a designer; and research and legal protection of designs. This book is a good reference for students taking management studies and individuals who want to understand the significance of design and development to the commercial organization.

Develop a more systematic, human-centered, results-oriented thought process Design Thinking is the Product Development and Management Association's (PDMA) guide to better problem solving and decision-making in product development and beyond. The second in the New Product Development Essentials series, this book shows you how to bridge the gap between the strategic importance of design and the tactical approach of design thinking. You'll learn how to approach new product development from a fresh perspective, with a focus on systematic, targeted thinking that results in a repeatable, human-centered problem-solving process. Integrating high-level discussion with practical, actionable strategy, this book helps you re-tool your thought processes in a way that translates well beyond product development, giving you a new way to approach business strategy and more. Design is a process of systematic creativity that yields the most appropriate solution to a properly identified problem. Design thinking disrupts stalemates and brings logic to the forefront of the conversation. This book shows you how to adopt these techniques and train your brain to see the answer to any question, at any level, in any stage of the development process. Become a better problem-solver in every aspect of business Connect strategy with practice in the context of product development Systematically map out your new product, service, or business Experiment with new thought processes and decision making strategies You can't rely on old ways of thinking to produce the newest, most cutting-edge solutions. Product development is the bedrock of business —whether your "product" is a tangible object, a service, or the business itself — and your approach must be consistently and reliably productive. Design Thinking helps you internalize this essential process so you can bring value to innovation and merge strategy with reality.

Shows you what it takes to develop products that blow your users away—and take market share from your competitors. This book will explain how the principles behind agile product development help designers, developers, architects, and product managers create awesome products; and how to look beyond a shiny user interface to build a great product. Most importantly, this book will give you a shared framework for your product development team to collaborate effectively. Product development involves several key activities—including ideation, discovery, design, development, and delivery—and yet too many companies and innovators focus on just a few of them much to the detriment of the product's success in the marketplace. As a result we still continue to see high failure rates in new product development, be it inside organizations or startups. Unfortunately, or rather fortunately, these failures are largely avoidable. In the last fifteen years, advances in agile software development, lean product development, human-centered design, design thinking, lean startups and product delivery have

helped improve individual aspects of product development. However, not enough guidance has been available to integrate them in the context of the product development life cycle. Until now. Product developer extraordinaire Tathagat Varma in *Agile Product Development* integrates individual knowledge areas into a field manual for product developers. Organized in the way an idea germinates, sprouts, and grows, the book synthesizes the body of knowledge in a pragmatic way that is more natural to the entire product creation process rather than from individual practices that constitute it. In today's hyper-innovative world, being first to the market, or delivering feature-loaded products, or even offering the latest technology doesn't guarantee success anymore. Sure, those elements are all needed in the right measures, but they are not sufficient by themselves. And getting it right couldn't be more important: Building products that deliver awesome user experiences is the top challenge facing businesses today, especially in a post-Apple world where user experience and design has been elevated to a cult status.

Product development teams are composed of an integrated group of professionals working from the nascent stage of new product planning through design creation and design review and then on to manufacturing planning and cost accounting. An increasingly large number of graduate and professional training programs are aimed at meeting that need by creating a better understanding of how to integrate and accelerate the entire product development process. This book is the perfect accompaniment and a comprehensive guide. The second edition of this instructional reference work presents invaluable insight into the concurrent nature of the multidisciplinary product development process. It can be used in the traditional classroom, in professional continuing education courses or for self-study. This book has a ready audience among graduate students in mechanical and industrial engineering, as well as in many MBA programs focused on manufacturing management. This is a global need that will find a receptive readership in the industrialized world particularly in the rapidly developing industrial economies of South Asia and Southeast Asia. Reviews the precepts of Product design in a step-by-step structured process and focuses on the concurrent nature of product design Helps the reader to understand the connection between initial design and interim and final design, including design review and materials selection Offers insight into roles played by product functionality, ease-of assembly, maintenance and durability, and their interaction with cost estimation and manufacturability through the application of design principles to actual products

- For beginners who are new to developing products and selling them- For experienced product developers looking to remove risks and fill in knowledge gaps- For inventors with new products seeking information on validation, manufacturing and sales channels- For Amazon Sellers looking to take the next step, to introduce unique products, grow into retailers, and expand their business. Complete step-by-step instructions on how to identify unique winning products, validate customer demand, ensure profitability, design and engineer your product, identify factories, negotiate effectively, manage shipping & logistics, and generate sales across all channels from independent retailers to chains and big box stores.

As industries adopt consumer-focused product development strategies, they should offer broader product ranges in shorter design times and the processes that can manufacture in arbitrary lot sizes. In addition, they would need to apply state-of-the-art methods and tools to easily conduct early product design and development trade-off analysis among competing objectives. *Methods in Product Design: New Strategies in Reengineering* supplies insights into the methods and techniques that enable implementing a consumer-focused product design philosophy by integrating design and development capabilities with intelligent computer-based systems. The book defines customer focused design and discusses ways to assess changing demands and sources, and delves into what is needed to successfully manufacture goods in a demanding market. It reviews proven methods for assessing customer need. Then, after

showing how changing needs impact the reengineering of products, it explains how change can be efficiently achieved. It details how IT advances and technology support customer-focused product development, discusses cutting-edge mass customization principles that maximize cost-effective production, and illustrates how to implement effective predictive maintenance policies. *Methods in Product Design: New Strategies in Reengineering* provides methods, state-of-the-art technologies, and new strategies for customer-focused product design and development that allow organizations to quickly respond to the demanding global marketplace.

Innovation in Product Design gives an overview of the research fields and achievements in the development of methods and tools for product design and innovation. It presents contributions from experts in many different fields covering a variety of research topics related to product development and innovation. Product lifecycle management, knowledge management, product customization, topological optimization, product virtualization, systematic innovation, virtual humans, design and engineering, and rapid prototyping are the key research areas described in the book. It also details successful case studies developed with industrial companies. *Innovation in Product Design* is written for academic researchers, graduate students and professionals in product development disciplines who are interested in understanding how novel methodologies and technologies can make the product development process more efficient.

The goal of the world class company is to produce a product or service that offers customers the highest quality at the lowest cost and in the shortest time possible. *Product Design Review* describes a highly effective method for quality control in product design, as well as its applications in a wide variety of business settings. Take care of the problems that erupt during product development by nipping them in the bud (during the design stage). Takashi Ichida describes a powerful tool insuring quality at concept stage, thereby eliminating redesign, retooling, rework, and error throughout the production process. The program he describes can be carried out through every phase of new product development - - from product planning to design, production, and marketing. Also explains how you can incorporate your customer feedback into the next production cycle. You'll always need to modify any process improvement technology to suit your company's culture, product type, manufacturing approach, and customer needs. *Product Design Review* has taken case studies from a cross section of industries and describes each company's unique application of Ichida's process. You'll not only see the tremendous results these companies have achieved by using Design Review, but you'll also see the difficulties they've encountered. Also included are five essays that compare Design Review with other innovations in manufacturing process such as artificial intelligence, checklists, quality function deployment (QFD), design of experiments (DOE), and configuration control.

Written primarily for directors and managers of food design and development, food scientists, technologists, and product developers, this book explains all the necessary information in order to help meet the increasing demands for innovation in an industry that is providing fewer resources. This updated edition, by a group of seasoned food industry business professionals and academics, provides a real-world perspective of what is occurring in the food industry right now, offers strategic frameworks for problem solving and R&D strategies, and presents methods needed to accelerate and optimize new product development. *Accelerating New Food Product Design and Development*,

Second Edition features five brand new chapters covering all the changes that have occurred within the last decade: A Flavor Supplier Perspective, An Ingredient Supplier Perspective, Applying Processes that Accelerate New Product Development, Looking at How the University Prepares Someone for a Career in Food, and Innovative Packaging and Its Impact on Accelerated Product Development. Offers new perspectives on what really goes on during the development process Includes updated chapters fully describing the changes that have occurred in the food industry, both from a developer's point of view as well as the consumer requirements Features a completely rewritten chapter covering the importance of packaging which is enhanced through 3D printing All of this against the impact on speed to market Filled with unique viewpoints of the business from those who really know and a plethora of new information, Accelerating New Food Product Design and Development, Second Edition will be of great interest to all professionals engaged in new food product design and development.

This text presents a set of product development techniques aimed at bringing together the marketing, design, and manufacturing functions of the enterprise. The integrative methods facilitate problem-solving and decision-making.

This Book Is Written By A Group Of International Experts On Concurrent Product And Process Design And Development. It Reflects Modern Trends And Approaches In Concurrent Engineering, With Particular Emphasis On Product Development Cycle. A Multi-Disciplinary Approach Is Adopted Throughout The Book. The Book Highlights Concurrent Engineering Organization; Enabling Tools And Techniques For Successful Concurrent Engineering; Manufacturing Strategy Decision Support Tools; Measure Of Manufacturing Performance For Concurrent Engineering; Economic Justification In A Concurrent Engineering Environment; Product Data Requirements In Concurrent Engineering. All These Features Make This Book An Extremely Valuable Reference Source For Practising Professionals And Engineering Students. A Number Of Prominent Scientists And Experts From Different Countries Have Jointly Worked To Compile The Chapters Of This Book Reflecting The Latest Developments And Modern Approaches To Concurrent Engineering.

This book outlines the process of sustainable product design and development. It presents design guidelines that help prolong the life of a product and minimize its environmental impact. These guidelines specifically enable product design for end-of-life (EoL) objectives such as reuse, recycling and remanufacturing. Sustainable Product Design and Development also presents mathematical models that will help the designer determine the cost of designing sustainable products. This cost can be computed early during the design stage of a product. Sustainable Product Design and Development presents different ways and means by which a product can address all three pillars of sustainability—environmental conservation, social sustainability, and economic sustainability. Various case studies are incorporated in different chapters. Case studies on designing products for assembly, disassembly and remanufacturing have been presented in their respective chapters. The book also provides an overview of global environmental legislation to help the reader grasp the importance of waste management and sustainable product design. This book is aimed at professionals, engineering students, environmental scientists, and those in the business environment.

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Biomechanical engineering is involved with creating and producing a variety of products in everyday use, from environmentally safe plastics to various foods, fabrics, and medicines. A combination of engineering and biology, it is a fast-growing field with many new and exciting opportunities in genetic engineering and biotechnology. However, research surrounding biomechanical applications is scattered and often restricted, leading to the need for a comprehensive publication of the recent advances and developments in this emerging field. *Design, Development, and Optimization of Bio-Mechatronic Engineering Products* provides pivotal research on the application of combining mechanical engineering with human biological systems in order to develop bio-mechatronic products like pacemakers, artificial kidney replacements, artificial hearts, and new joints or limbs to better and more accurately monitor and advance human health. While highlighting topics such as orthotic devices, inter-electrode gap, and biomaterial applications, this publication explores producing artificial material to work in sync with the human body. This book is ideally designed for engineers, health professionals, technology developers, researchers, academicians, and students.

"Focuses on functional, aesthetically pleasing, mechanically reliable, and easily made products that improve profitability for manufacturers and provide long-term satisfaction for customers. Offers concrete, practical insight immediately applicable to new product design and development projects."

Since the success of products significantly depends on the quality of product performance, inadequate management of the product design process can lead to improper performance of products that can result in significant long-term business losses. *Design for Profitability: Guidelines to Cost Effectively Manage the Development Process of Complex Products* presents a design guideline for complex product design and development that enables you to cost-effectively improve the technical performance of your products and consequently improve your competitiveness in the marketplace as well as improve profitability. The book helps you improve the competitiveness of your organization in the market and eventually improve profitability. It presents a mobile robots design guideline based on an empirical study of the mobile robots design process. This is an unprecedented guideline based on the empirical investigation of the internal aspects of the design process of complex products for cost-effectively enhancing the competitiveness in the market. The book also presents a hybrid lean-agile design paradigm for mobile robots. In addition, it points out key approaches and risks to manage the product development process efficiently. In designing complex products and integrated systems, industrial designers face a dilemma of cost-effectively striking a balance between product development time and product performance attributes. This book shows how and when value is added in product design and development through identifying statistically the most and least correlated design activities and strategies to product performance attributes. Introducing a new paradigm in the field of engineering design, the book gives you key approaches to efficiently manage the product development process.

The discovery of market needs and the manufacture of a product to meet those needs are integral parts of the same process. Since most textbooks on new product development are written from either a marketing or an engineering perspective, it is important for students to encounter these two aspects of product development together in a single text. *Product Design: Practical Methods for the Systematic Development of New Products* covers the entire new product development process, from market research through concept design, embodiment design, design for manufacture, and product launch. Systematic and practical in its approach, the text offers both a structured management framework for product development and an extensive range of specific design methods. Chapters feature "Design Toolkits" that provide detailed guidance on systematic design methods, present examples with familiar products, and conclude with reviews of key concepts. This major text aims to turn the often haphazard and unstructured product design process into a quality-controlled, streamlined, and manageable

procedure. It is ideal for students of engineering, design, and technology on their path to designing new products.

By examining the interface between consumer behavior and new product development, *People and Products: Consumer Behavior and Product Design* demonstrates the ways in which consumers contribute to product design, enhance product utility, and determine brand identity. With increased connectedness and advances in technology, consumers and marketers are more closely connected than ever before. Yet consumer behavior texts often overlook the application of the subject to product design, testing, and success. This is the first book to explore this interface in detail, exploring such issues as: the attributes and qualities that consumers demand from products and services, and social and cultural forces to be aware of; design and form and how they facilitate product usage; technological developments and the ways they have changed how consumers interact with products; product disposal and sustainability; emerging and future trends in consumer behavior and product development and design. This exciting volume is relevant to anyone interested in marketing, consumer behavior, product development, technology, engineering, design, and brand management.

IT'S ALL IN THE DETAILS: Interfaces Displays Buttons Dials Keypads Pen Input Speakers Microphones Antennae Sensors Ports Processing Microprocessors Logic Devices Microcontrollers DSP Analog Devices Sensors Wireless Communications System Memory Mass Storage Software & Communications Mass Storage Power Sources Electronic Packaging Circuit Boards IC Packaging Discrete Components Connectors Mechanical Assemblies Housing Shielding Display Bezels Thermal Management Hinges Ruggedization Plan Product Success -- One Component at a Time For product designers and engineers, this is an ideal roadmap to developing cutting-edge consumer portable electronics. *Portable Electronics Product Design and Development* is a powerful engineering tutorial that approaches design component by component, offering priceless guidance on key decisions, including selection and integration of every element in electronic portables. Author and engineer Bert Haskell, an electronics product design specialist, sets the stage with a succinct assessment of the portable electronics marketplace, analyzing the features that consumers do like and the flaws they do not like. Then he offers valuable engineering insights and component comparisons you can use to improve the way your products work and look, and to help them fare better in the marketplace. In the concluding chapters, he offers unique insights into the economics that drive the portable electronics industry and a creative vision for shaping future product concepts. **FEATURES CASE STUDIES OF LANDMARK SUCCESSES -- CELL PHONES, CAMCORDERS, AND DIGITAL CAMERAS** This powerful engineering guide will help you: * Solve interface and size problems * Maintain parameters of convenience, utility, and portability * Assess the cost of technology tradeoffs * Find effective answers on issues such as thermal management, shielding, and durability * Avoid consumer turnoffs

Product Design and Development Tata McGraw-Hill Education *Product Design and Development* *Product Design and Development* ISE *Product Design and Development* Concepts are critical for the development and marketing of products and services. They constitute the blueprint for these products and services, albeit at the level of consumers rather than at the technical level. A good product concept can help make the product a success by guiding developers and advertising in the right direction. Yet, there is a dearth of both practical and scientific information about how to create and evaluate concepts. There has been little or no focus on establishing knowledge bases for concepts. Concept development is too often relegated to the so-called "fuzzy front end." *Concept Research in Food Product Design and Development* remedies this inattention to product concepts by providing a unique treatment of concepts for the business professional as well as for research scientists. The book begins with simple principles of concepts, moves forward to methods for testing concepts, and then on to more substantive areas such as establishing validity, testing internationally and with children,

creating databases, and selling in new methods for concept testing. The book combines a “how to” business book with a detailed treatment of the different facets of concept research. As such, the book represents a unique contribution to business applications in food, and consumer research methods. The book is positioned specifically for foods, to maintain a focus on a coherent set of topics. Concept Research in Food Product Design and Development appeals to a wide variety of audiences: R&D, marketing, sensory analysts, and universities alike. Corporate R&D professionals will learn how to create strong concepts. Marketers will recognize how concepts are at the heart of their business. Sensory analysts will find the book a natural extension of their interest in product features. University students will understand how concept research is a critical part of the “consumer-connection.” Concept Research in Food Product Design and Development is the definitive, innovative text in describing how to create, analyze, and capitalize upon new product concepts.

Innovation in product design starts with materials. Developing successful commercial products demands a sound understanding of the materials that go into those products—their uses, their costs, their lifetime performance. However, the valuable knowledge of materials engineers is often not fully leveraged in the creative phase of the product design cycle. Gessinger seeks to bridge this gap that exists in many companies. Written from the bottom-up perspective of the engineer or scientist on a product design team, *Materials and Innovative Product Design* introduces business, economics and strategic product development to the materials specialist and demystifies materials selection for other members of the design team and manufacturing management. Using case studies from innovative organizations, such as ABB, and successful start-ups, such as NDC, Day4Energy, and Metoxit, Gessinger illustrates how the integration of different engineering and business disciplines can power innovation in the design process. By addressing the real world needs of innovators, this book allows the reader to unlock the potential of the new material types that have been changing the face of product design and deploy an integrated business approach to materials selection and the design process. Allows engineers to develop a fuller understanding of economics and business objectives in order to contribute more effectively to innovative product design Introduces the business opportunities and practical challenges of deploying new material types to design and manufacturing management Illustrates how to harness the power of R&D within the design cycle through case studies of innovative and successful organizations that have brought new materials technologies to known markets and known materials to new markets

"This book provides a detailed view on the current issues, trends, challenges, and future perspectives on product design and development, an area of growing interest and increasingly recognized importance for industrial competitiveness and economic growth"--Provided by publisher.

Designed for use in the interdisciplinary courses on product development as well as by practicing professionals, *Product Design and Development* strikes a balanced approach between theory and practice, through the authors' emphasis on methods.

The food and beverage industries today face an intensely competitive business environment. To the degree that the product developer and marketer – as well as general business manager – can more fully understand the consumer and target development and marketing efforts, their business will be more successful. *Sensory and Consumer Research in Food Product Design and Development* is the first book to present, from the business viewpoint, the critical issues faced by sensory analysts, product developers, and market researchers in the food and beverage arena. The book's unique perspective stems from the author team of Moskowitz, Beckley, and Resurreccion, three leading practitioners in the field, who each combines an academic and business acumen. The beginning reader will be introduced to systematic experimentation at the very early stages, to newly emerging methods for data acquisition/knowledge development, and to points of view employed by successful food and

beverage companies. The advanced reader will find new ideas, backed up by illustrative case histories, to provide yet another perspective on commonly encountered problems and their practical solutions. Aimed toward all aspects of the food and beverage industry, Sensory and Consumer Research in Food Product Design and Development is especially important for those professionals involved in the early stages of product development, where business opportunity is often the greatest.

"Outlines best practices and demonstrates how to design in quality for successful development of hardware and software products. Offers systematic applications tailored to particular market environments. Discusses Internet issues, electronic commerce, and supply chain."

The development of a robust drug product requires juggling many competing priorities such as overcoming scientific challenges, following regulatory requirements, and managing business-related concerns. Unfortunately, despite large resources spent on R&D, multifactor productivity of pharmaceuticals is on the decline for several years now. Because of this business reality, pharmaceutical companies have seen a notable change in the traditional operating model and footprint over the past couple of decades. Outsourcing, in particular, has emerged as a successful business model for many pharmaceutical companies looking for ways to strategically increase their R&D capabilities and to augment their in-house resources. How to Integrate Quality by Efficient Design (QbED) in Product Development bridges the gap between theory and practice when it comes to strategic decision-making in a pharmaceutical research scenario. This book will introduce the concept of QbED and focus on various aspects such as patient-centric product designs, platform-based manufacturing technologies, business acuity, and regulatory strategies to balance the challenges in outsourcing with the need for strategic and statistically sound experiments rooted in good science. Detailed discussions will cover pharmaceutical business models, regulatory approval process, quality by design (QbD), business analytics, and manufacturing excellence specifically for small molecules and solid oral dosage forms. With the addition of case studies, flowcharts, diagrams, and data visualizations, How to Integrate Quality by Efficient Design (QbED) in Product Development will be a practical reference to help professionals working in the area of pharmaceutical drug development, strategy, and outsourcing management. Part of the Expertise in Pharmaceutical Process Technology series edited by Michael Levin integrates pharmaceutical business models, economics, and outsourcing-related challenges into pharmaceutical product development. Discusses relevant literature references in quality risk management, business strategy, QbD, and product development. Provides decision-making flowcharts, conceptual diagrams, and data visualizations to make the book useful, easy to read, and to understand

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