

An Introduction To Textile Technology

The use of mathematical modelling and computer simulation can vastly improve the quality, efficiency and economic success of textile technology. Simulation in textile technology provides a comprehensive review of the key principles, applications and benefits of modelling for textile production. After an introduction to modelling and simulation, Simulation in textile technology goes on to review the principles and applications of the main types of model. The book first discusses neural networks and their applications before going on to explore evolutionary methods and fuzzy logic. It then considers computational fluid dynamics and finite element modelling. The modelling of fibrous structures and yarns are considered in the following chapters, along with wound packages, woven, braided and knitted structures. The book concludes by reviewing the simulation of textile processes and machinery. With its distinguished editor and team of expert contributors, Simulation in textile technology is a valuable reference tool for all those involved in both developing models of textile processes and those applying them to improve process efficiency and product quality. Provides a comprehensive review of the key principles, applications and benefits of modelling for textile production Discusses neural networks and their applications before going on to explore evolutionary methods and fuzzy logic Considers the modelling of fibrous structures and yarns, along with wound packages, woven, braided and knitted structures

How Are Textile Fabrics Formed? Principles of Fabric Formation is a treatise on the modern production systems of woven, knitted, braided, nonwoven, triaxial, multiaxial, and 3D fabrics. This book offers a basic understanding of the technicalities involved in the formation of different types of textile fabrics, and brings out the relative merits and limitations of each production process in one single volume. Gain insight into the World of Textile Fabrics Providing readers with an appreciation of the technicalities involved in the formation of different types of textile fabrics, the author describes all major fabric formation methods, and explains each stage of formation in the text. He also addresses all major topics related to the formation of different classes of textile fabrics, including yarn winding, warping, yarn sizing, woven fabric construction, weaving, welt knitting, warp knitting, braiding, nonwovens, and triaxial, multiaxial and 3D fabrics. Comprised of 16 chapters, this multifaceted work: Provides a technical description of fabric formation systems Focuses on the diverse technicalities involved in each and every stage of formation Contains a comprehensive review of the major principles involved Principles of Fabric Formation is an exclusive junior/senior undergraduate level textbook with a focus on the diverse technical principles involved in production of the entire gamut of textile fabrics.

"Textile Technology" presents a well-written and readable introduction into the field of textile engineering. It is based on an elementary level course focusing on the manufacture (processes and machines) of yarn, fabric, knitwear, nonwovens, braids, reinforcing fabrics, and technical textiles. The book also provides the technicians and engineers in the textile industry with an up-to-date review of processes and equipment for textile manufacturing. The book covers all processing steps for the manufacturing of textiles, describing materials, processes and machines, finishing, making-up, and recycling. To provide a better understanding of the individual textile processes, each chapter ends with an example describing the respective processing steps for a specific textile product. In addition, current and future development trends are discussed. Contents: - Raw Materials - Yarn Production - Fabric Production - Knitwear Production - Nonwovens Production - Braiding Processes and Machines - Production of Two-dimensional Reinforcing Fabrics - Textile Finishing - Processes and Machines for Making-up - Technical Textiles - Disposal and Recycling of Textiles

The book "Frontiers and Textile Materials will deal with the important materials that can be utilized for value-addition and functionalization of textile materials. The topics covered in this book includes the materials like enzymes, polymers, etc. that are utilized for conventional textile processing and the advanced materials like nanoparticles which are expected to change the horizons of textiles. The futuristic techniques for textile processing like plasma are also discussed.

Chemical Technology in the Pre-Treatment Processes of Textiles

Advances in Modeling and Simulation in Textile Engineering

Frontiers of Textile Materials

Self-paced Program Designed for the Australian Textile Industry

The Impact and Prospects of Green Chemistry for Textile Technology

Trade and Technology Networks in the Chinese Textile Industry

Based on a project backed by the European Union, this is a must-have resource for researchers in industry and academia concerned with application-oriented plasma technology research. Clearly divided in three sections, the first part is dedicated to the fundamentals of plasma and offers information about scientific and theoretical plasma topics, plasma production, surface treatment process and characterization. The second section focuses on technological aspects and plasma process applications in textile, food packaging and biomedical sectors, while the final part is devoted to concerns about the environmental sustainability of plasma processes.

Covers information required for students taking the Design and technology : textiles technology GCSE examination. Follows the Edexcel examination specifications.

Exploring textiles - The technology process - Textiles production - Textile fibres - Spinning yarns - Fabrics - Textile printing and dyeing - The sewing machine - Materials testing - Labelling - Textiles and the environment - Textiles maintenance - Project planning - Design inspirations - Projects.

Jacquard fabrics feature intricately woven designs. Through the use of digital technology, new design concepts, principles and methods for producing jacquard fabrics have been established, facilitating the creation of a range of novel effects. Innovative jacquard textile design using digital technologies is a unique guide to the fundamental design principles, techniques and applications resulting from this important development. Beginning with an introduction to jacquard textile design, the book goes on to give an overview of the development of jacquard fabrics and textile design methods. The principles and methods of digital jacquard textile design are considered, followed by a chapter on structural digital design. Subsequent chapters cover the digital design of colourless and colourful jacquard textiles, and the use of novel simulative effects, shot effects and double-face effects in jacquard textiles. A review of the applications of digitally designed jacquard textiles is then presented before the book concludes with a discussion of current issues and future trends in digital jacquard textile design. With its distinguished authors, Innovative jacquard textile design using digital technologies is an authoritative guide for all those looking to employ this exciting technology in their work, including designers and product developers in the textile, interior and apparel industries, and academics interested in this field. Provides a unique guide to the fundamental design principles, techniques and applications of jacquard textile design Covers structural digital design, digital design of colourless and colourful jacquard textiles, simulative effects, shot effects and double-face effects Includes a comprehensive discussion of current issues and future trends in digital jacquard textile design

Technology of Textile Properties

Generation and Control

Innovative Jacquard Textile Design Using Digital Technologies

New Product Development in Textiles

An Introduction to the Statistical Design of Experiments for Textile Technologists

Materials, Design and Technology

In the textile industry, there is a pressing need for people who can facilitate the translation of creative solutions from designers into manufacturing language and data. The design technologist has to understand the elements and principles employed by designers and how these change for various textile media. One must also have a good understanding of the processes, materials and products for which the textile designer is required to produce creative solutions. This book will be for designers wishing to improve their technological knowledge, technologists wishing to understand the design process, and anyone else who seeks to work at this design-technology interface. Key Features: - Provides a comprehensive information about textile production, apparel production and the design aspects of both textile and apparel production. - Fills the traditional gap between design and manufacture changing with advanced technologies. - Includes brief summary of spinning, weaving, chemical processing and garmenting. - Facilitates translation of creative solutions from designers into manufacturing language and data. - Covers set of workshop activities.

The field of fibre rope technology has witnessed incredible change and technological advance over the last few decades. At the forefront of this change has been the development of synthetic fibres and modern types of rope construction. This handbook updates the history and structural mechanics of fibre rope technology and describes the types and properties of modern rope-making materials and constructions. Following an introduction to fibre ropes, the Handbook of fibre rope technology takes a comprehensive look at rope-making materials, rope structures, properties and mechanics and covers rope production, focusing on laid strand, braided, low-twist and parallel yarn ropes. Terminations are also introduced and the many uses of rope are illustrated. The key issues surrounding the inspection and retirement of rope are identified and rope testing is thoroughly examined. The final two chapters review rope markets, distribution and liability and provide case studies from the many environments in which fibre rope is used. The Handbook of fibre rope technology is an essential reference for everyone assisting in the design, selection, use, inspection and testing of fibre rope. A comprehensive look at rope-making materials and structures, properties and mechanics Covers rope production including laid strand, braided, low-twist and parallel yarn ropes and rope terminations Rope testing is examined in depth, as well as the key issues surrounding rope retirement

Waste Management in the Textiles Industry explores and explains the latest technologies and best practices for an integrated approach to the management and treatment of wastes generated in this industry. Provides a strong technological analysis of the manufacturing supply chain, including spinning, fabric production, finishing, garment manufacture, and the packaging of clothing Explains how textile technology perspectives feed into management decision-making about sustainability

Addresses the industry’s impact on air and water quality and landfill waste

Textile industry is one of the few basic industries, which is characterised as a necessary component of human life. One may classify it as a more glamorous industry, but whatever it is, it provides with the basic requirement called clothes. Spinning is the process of converting cotton or manmade fibre into yarn to be used for weaving and knitting. Weaving is a method of textile production in which two distinct sets of yarns or threads are interlaced at right angles to form a fabric or cloth. Finishing refers to the processes that convert the woven or knitted cloth into a usable material. Printing is the process of applying colour to fabric in definite patterns or designs. The textile industry occupies an important position in the total volume of merchandise trade across countries. Developing countries account for little over two-third of world exports in textiles and clothing. It is the second largest employer after agriculture, providing employment to over 45 million people directly and 60 million people indirectly. The future for the textile industry looks promising, buoyed by both strong domestic consumption as well as export demand. This book is based on the latest technology involved in textile industry, which describes the processes available at the spinning and fabric forming stages coupled with the complexities of the finishing and colouration processes to the production of wide ranges of products. The major contents of the book are dyeing of textile materials, principles of spinning, process preparatory to spinning, principles of weaving, textile chemicals, yarn preparation, weaving and woven fabrics, knitting and knit fabrics, nonconventional fabrics, cellulosics, mixed fibers, printing compositions, printing processes, transfer dyes, transfer inks etc. It describes the manufacturing processes and photographs of plant & machinery with supplier’s contact details. It will be a standard reference book for professionals, entrepreneurs, textile mill owners, those studying and researching in this important area and others interested in the field of textile industry.

Handbook of Fibre Rope Technology

Textiles ... and Sew On

An Introduction

Textiles and Fashion

Weaving and Knitting

Fundamentals and Applications

Principles of Textile Finishing presents the latest information on textile finishing for industry professionals and researchers who are new to the field. As these processes are versatile and varied in their applications, the book provides information on how decisions on finishes and techniques may be made subjectively or based on experience. In addition, the book presents the desired final properties of textile materials and how they differ widely from product to product, helping finishers who face significant challenges in delivering fabrics that meet the requirements of end-users be successful. Written by an author who is an expert in the field, and who has with many years of experience in industry and academia, this book provides an accessible introduction to the principles, types, and applications of textile finishes. Provides an accessible introduction to the principles, types, and applications of textile finishes Assists industry professionals and researchers in selecting finishes that will result in fabric properties that meet the requirements of end-users Written by an author with years of experience in industry and academia and who is an expert in the field

Sustainable Technologies for Fashion and Textiles combines the latest academic research and industrial practices to shed light on a wide range of activities that influence how the textiles industry affects the natural environment. Pressure from regulators, customers and other stakeholders has pressed companies to translate general sustainability concepts and ideas into business practices. This is leading to improvements in how the industry consumes water, electricity and chemicals, and to a reduction in the amount of waste generated by textile processes. This book groups approaches to these topics under four themes, fiber, yarn and fabric production, chemical processing, garment manufacturing and recycling. Addresses sustainability challenges that occur throughout the supply chain, from the sourcing of raw materials, to recycling finished products Provides introductions to sustainability—both in general and within the textiles industry—making this topic accessible for readers of all backgrounds Compares the advantages and disadvantages of different approaches to sustainability, helping readers avoid pitfalls when devising their own strategies

Textile manufacturing is an important subject in textile programs and processing industries. The introduction of manmade and synthetic fibers, such as polyester, nylon, acrylic, cellulose, and Kevlar, among others, has greatly expanded the variety of textile products available today. In addition, new fiber development has brought about new machines for producing yarns, fabrics, and garments. Textile Manufacturing Processes is a collection of academic and research work in the field of textile manufacturing. Written by experts, chapters cover topics such as yarn manufacturing, fabric manufacturing, and garment and technical textiles. This book is useful for students, industry workers, and anyone interested in learning the fundamentals of textile manufacturing. Designed for the textile industry, this book is frequently required to make design decisions throughout the textile industry. It deals with the all aspects of the design process from the beginning - from how to go about attracting clients through range planning and development to presentation. It firmly locates the work of the textile designer within the wider context of the global textile and clothing industries and considers the process of design for both freelance and in-house designers. Commercial considerations are also covered, together with trend forecasting and the factors influencing purchasing decisions. Based on the author's experience as a textile designer in industry and as a lecturer at UMIST, Manchester, UK, this book covers the entire textile design process from briefing through initial ideas, research and design development, to finished fabrics being sold to garment manufacturers and to retail. The Handbook of textile design is an invaluable reference for students of textile design as well as buyers and merchandisers of textile products, and anyone requiring an understanding of the textile design process. The range and diversity of textile design techniques available to the designer The professional practice of running a textile design studio How design work is carried out from the initial brief all the way through to invoicing the client

New Concepts, Methods, and Applications

Fabric Technology

Opening Up Before the Reform

Waste Management in the Fashion and Textile Industries

Technologies - Methods - Materials - Properties

Theory and Applications

In this book, experts on textile technologies convey both general and specific information on various aspects of textile engineering, ready-made technologies, and textile chemistry. They describe the entire process chain from fiber materials to various yarn constructions, 2D and 3D textile constructions, preforms, and interface layer design. In addition, the authors introduce testing methods, shaping and simulation techniques for the characterization of and structural mechanics calculations on anisotropic, pliable high-performance textiles, including specific examples from the fields of fiber plastic composites, textile concrete and textile membranes. Readers will also be familiarized with the potential offered by increasingly employed textile structures, for instance in the fields of composite technology, construction technology, security technology and membrane technology.

Currently, most of the textile industry and textile institutions are located in South Asia. The textile industry leads to the development of clothing from fibres, yarns, and fabrics. The industry is growing in this area as it has already been shifted from Europe and is being shifting from China. As the textile industry is growing, many new textile intuitions are being established to provide for quality textile education. This introductory level textbooks is geared towards them. This book will provide all necessary information from fibres to fabrics and their conversion to clothing. The importance of textiles in the current era along with the raw materials needed for the textiles are given. After that, it is explained how the yarn is made from fibres. Then the fabrics manufacturing, the printing and dyeing of textiles and the conversion of fabrics into the garments is discussed. Also, the testing of fibres, yarns and fabrics along with the description of technical textiles is mentioned. This book is beneficial for all readers who are going to start their career in textiles or are going to start the engineering degree in textiles. The present book is designed for the first year students (especially for the National Textile University Faisalabad) of textile engineering.

Textile Technology and Design addresses the critical role of the interior at the intersection of design and technology, with a range of interdisciplinary arguments by a wide range of contributors: from design practitioners to researchers and scholars to aerospace engineers. Chapters examine the way in which textiles and technology – while seemingly distinct – continually inform each other through their persistent overlapping of interests, and eventually coalesce in the practice of interior design. Covering all kinds of interiors from domestic (prefabricated kitchens and 3D wallpaper) to extreme (underwater habitats and space stations), it features a variety of critical aspects including pattern and ornament, domestic technologies, craft and the imperfect, gender issues, sound and smart textiles. This book is essential reading for students of textile design and interior design.

The Impact and Prospects of Green Chemistry for Textile Technology provides a review and summary of the role of green chemistry in textiles, including the use of green agents and sustainable technologies in different textile applications. The book systematically covers the history and chemistry of eco-friendly colorants, chitin, chitosan, cyclodextrin, biomordants, antimicrobial, UV protective, flame retardant, insect repellent textiles, and advanced pre- and post- treatment technologies, such as the sonochemistry and plasma methods currently employed in functional modifications. The book also pays attention to the remediation of textile effluents using novel, sustainable and inexpensive adsorbents. Written by high profile contributors with many years of experience in textile technology, the book gives engineers and materials scientists in the textile industry the information they need to effectively deploy these green technologies and processes. Introduces green chemistry and sustainable technologies, and explores their role in different textile applications Examines the use of renewable materials, such as biopolymers, dyes and pigments, biomordants, polyphenols and plant extracts in functional finishing applications Deals the functional modification of textiles using state-of-the-art biotechnology and nanotechnology

Plasma Technology for Hyperfunctional Surfaces

From Interior Space to Outer Space

Principles, Design and Processes

An Introduction

Handbook of Textile Design

Textile Engineering

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An increasingly important feature across the technical textile industry is to produce textiles faster and to have more effective new product development (NPD). New product development in textiles: Innovation and production not only provides a fascinating overview of how products are launched, but is also a source of practical guidance for developing textile products successfully. Part one provides a general overview of innovation and textile product development that introduces the reader to the principles of developing and defining new products. Part two goes on to discuss a collection of international studies from across the textile industry. Chapters describe actual new product development projects, identifying the problems that were faced and what can be learnt from these projects, such as customer co-creation and methods for reducing the risk in NPD. Topics range from technical textiles and apparel to the end uses of textiles used within the automotive and packaging industries. With its distinguished editor and international team of expert contributors New product development in textiles: Innovation and production is an essential guide for academics and textile development professionals worldwide, in sectors ranging from design, production and marketing through to management. Provides a fascinating overview of how products are launched A source of practical guidance for developing textile products successfully Covers topics from technical textiles and apparel to the end uses of textiles used within the automotive and packaging industries

Produced for unit SEF101 (Introduction to fibre science and textile technology) offered by the Faculty of Science and Technology’s School of Engineering and Technology in Deakin University’s Open Campus Program.

The aim of this book is to trace the historical origins of China’s economic reforms. From the 1920s and 1930s strong ties were built between Chinese textile industrialists and foreign machinery importers in Shanghai and the Yangzi Delta. Despite the fragmentation of China, the contribution of these networks to the modernization of the country was important and longstanding. Facing the challenge of growing in a fragmented country, Chinese textile firms such as Daifeng, Dacheng and Likin focused on urban markets and also on importing technology for upgrading their production. When the war against Japan blocked trade routes inside China, these networks were concentrated in Shanghai where they envisaged an export-oriented development strategy for China that was based on importing machinery and exporting manufactured goods. However, this strategy was only implemented precariously in Shanghai, while the city stood as a neutral space in the first years of the Japanese occupation, but was only consolidated in Hong Kong in the late 1940s, where textile industrialist and most of the foreign importers migrated. These networks were thus reestablished in Hong Kong, where they contributed to the city’s industrialization in the Cold War period. Meanwhile, the Chinese industrialists that stayed in Shanghai and the Yangzi Delta had to adapt to the Maoist regime and were progressively incorporated into the state-owned companies or the local government agencies such as the United Front or the Textile bureaus. However, from the early 1970s, the links between Hong Kong and Shanghai were reactivated and these networks played, again, a key role in the modernization of China, especially regarding the imports of technology and exports of manufactured goods. The book ends with the first joint-ventures between Hong Kong businessmen and Chinese local administrations that took place in the beginnings of China’s economic reforms in 1979.

Principles of Textile Finishing

Simulation in Textile Technology

Innovation and Production

Textile Technology Introduction to Spinning

Fabric Manufacturing Technology

Textile Technology and Design

Braided fabrics are made by interlacing yarns or strips of fabric. Braiding produces a wide range of structures for technical textile applications from medical sutures to cables for anchoring ships. Written by one of the world’s leading experts in the field, the book reviews the basic principles, design and processes used in braiding. The book also discusses specialised braiding techniques such as spiral braiding and lace technology. Provides a solid foundation in the fundamentals of braiding design, processes and machinery Covers the patterning of braided products and the structural and colour design of both flat and tubular braids Reviews maypole braiding machines and machines

This major textbook is designed for students studying textiles and fashion at higher and undergraduate level, as well as those needing a comprehensive and authoritative overview of textile materials and processes. The first part of the book reviews the main types of natural and synthetic fibres and their properties. Part two provides a systematic review of the key processes involved first in converting fibres into yarns and then transforming yarns into fabrics. Part three discusses the range of range of finishing techniques for fabrics. The final part of the book looks specifically at the transformation of fabric into apparel, from design and manufacture to marketing. With contributions from leading experts in their fields, this major book provides the definitive one-volume guide to textile manufacture. Provides comprehensive coverage of the types and properties of textile fibres to yarn and fabric manufacture, fabric finishing, apparel production and fashion Focused on the needs of college and undergraduate students studying textiles or fashion courses Each chapter ends with a summary to emphasise key points, a comprehensive self-review section, and project ideas are also provided

Textile Technology is a unique and readable introduction into the field of textile engineering. It is based on an elementary-level course focusing on the manufacture (processes and machines) of yarn, fabric, knitwear, nonwovens, braids, reinforcing fabrics, and technical textiles. It provides technicians and engineers in the textile industry with an up-to-date review of processes and equipment for textile manufacturing. The book covers all processing steps for the manufacturing of textiles, describing materials, processes and machines, finishing, making-up, and recycling. To provide a better understanding of the individual textile processes, each chapter ends with an example describing the respective processing steps for a specific textile product. In addition, current and future development trends are discussed. The second edition is brought up to date with extensive coverage of new developments, such as in the fields of testing, measurement, and simulation.

Odour in Textiles: Generation and Control presents the essential science and mechanisms behind the formation of odours in textiles. It discusses consumer perception of odour in clothing, the mechanism of odour formation in the skin, and the role of textile fibres and structures in odour formation. It also discusses odour controls and testing methods available for measurement of odours in textiles. Features: • Fills a gap in the literature as the first book to focus on textile and odour interaction • Discusses microbiological aspects of odour formation in simple terms • Details the role of textile fibres and structures on odour formation • Describes various testing methods, standards, and regulatory norms for odour analysis This book will appeal to a broad audience, including industry professionals in the textiles industry, hygiene and health care, the chemical and finishing industry, and odour measurement and testing. It will also interest advanced students and research scholars studying textile engineering, clothing science, and fashion design.

Smart Fibres, Fabrics and Clothing

Study guide and readings

Textile Manufacturing Processes

Braiding Technology for Textiles

Food, Biomedical and Textile Applications

The Complete Technology Book on Textile Spinning, Weaving, Finishing and Printing (3rd Revised Edition)

This important book provides a guide to the fundamentals and latest developments in smart technology for textiles and clothing. The contributors represent a distinguished international panel of experts and the book covers many aspects of cutting edge research and development. Smart fibres, fabrics and clothing starts with a review of the background to smart technology and goes on to cover a wide range of the material science and fibre science aspects of the technology including: Electrically active polymeric materials and the applications of nonionic poly substrates stimuli-responsive interpenetrating polymer network hydrogels; Permeation control through stimuli-responsive polymer membranes; optical fibre sensors, hollow fibre membranes for gas separation; integrating fibre-formed components into textile structures; Wearable electronic and photonic technologies; Adaptive and responsive textile structures (ARTS); Biomedical applications including the applications of scaffolds in tissue engineering It is essential reading for academics in textile and materials science departments, researchers, designers and engineering and clothing manufacturing will also find the latest insights into technological developments in the field valuable and fascinating.

Fabric Manufacturing Technology: Weaving and Knitting gives the reader a brief idea about the processes involved in fabric formation methods, namely weaving and knitting. It includes various mechanisms involved beginning with primitive handlooms to the latest shuttleless looms, and from hand knitting to the ultra-modern electronic knitting machines. Various design aspects involved in producing the different types of woven and knitted fabrics are dealt with comprehensively. The techno-economics of the latest weaving and knitting machines have been described in detail by aeronautical engineering, protective clothing, and more. Features: Covers the principles involved in the numerous operations of weaving and knitting processes Gives a basic understanding of fabric production, quality control and production Provides a summary of the fabric manufacturing process of weaving, knitting and nonwovens Discusses principles of mechanisms, as well as details of present-day machinery, with illustrations Explores the latest developments in knitting production by whole garment (Shima Seiki) and Knit and Wear (Stoll), CAD/CAM product and fabric manufacturing.

Advances in Modeling and Simulation in Textile Engineering: New Concepts, Methods, and Applications explains the advanced principles and techniques that can be used to solve textile engineering problems using numerical modeling and simulation. The book draws on innovative research and industry practice to explain methods for the modeling of all of these processes, helping readers apply computational power to more areas of textile engineering. Experimental results are presented and linked closely to processes and methods of implementation. Diverse concepts, theoretical principles, and numerical models are extensively covered. Textile engineering involves complex processes which are not easily expressed numerically or simulated, such as fiber motion simulation, yarn to fiber formation, melt spinning technology, optimization of yarn production, textile machinery design and optimization, and modeling of textile/fabric reinforcements. Provides new approaches and techniques to simulate a wide range of textile processes from geometry to manufacturing Includes coverage of detailed mathematical models and techniques for many different phenomena, including heat transfer, fluid dynamics and multi-phase flow

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Odour in Textiles

Textile Technology