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Book. Distributed Systems. Concepts and Design. 3rd edition. January 2000. Publisher: Addison Wesley. Authors: George Coulouris at University of Cambridge · George Coulouris · University of Cambridge.

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Distributed Systems by George Coulouris. Distributed Systems: Concepts and Design (3rd Edition). Published August 21st 2000 by Addison Wesley. Hardcover, 800 pages. Edition Language: English. Distributed Systems by George Coulouris. Distributed Systems: Concepts and Design. Published April 27th 2011 by Pearson.

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"The authors present a straightforward path for developing and deploying a global supply chain strategy that addresses the priorities of today's executive management teams." -- Hau Lee, Thoma Professor of Operations, Information and Technology, Stanford Graduate School of Business "Strategic Supply Chain Management, Second Edition, is an important resource for executives who are trying to take their supply chain performance to the next level. Given the enormous challenges of the current business environment, it's 'must' reading." -- Joe Francis, Executive Director, Supply Chain Council “Following on from their ground-breaking first edition, the authors provide further evidence of the critical role of supply chain management in creating competitive advantage. Managers facing the challenge of coping with increasing levels of complexity in global supply chains will find valuable guidance in this in this revised work.” -- Martin Christopher, Emeritus Professor of Marketing & Logistics, Cranfield School of Business, Cranfield University “This is not another one of those books that are heavy on theory but light on practical advice. Filled with examples of companies from a wide range of industries and geographical regions, it provides guidance that is clear and easy to understand.” -- Greg Clapp, SVP, Operations, Fujitsu "Concise and cogent, Strategic Supply Chain Management, Second Edition, lays out the key components for top supply chain performance and backs up these insights with new benchmarking research. Managers across the organization will find answers to their supply chain questions here." -- Paul Bischler, Vice President and Controller, Burlington Northern Santa Fe Railway

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Supply Management Strategies

The third edition of this textbook comprehensively discusses global supply chain and operations management (SCOM), combining value creation networks and interacting processes. It focuses on operational roles within networks and presents the quantitative and organizational methods needed to plan and control the material, information, and financial flows in supply chains. Each chapter begins with an introductory case study, while numerous examples from various industries and services help to illustrate the key concepts. The book explains how to design operations and supply networks and how to incorporate suppliers and customers. It examines how to balance supply and demand, a core aspect of tactical planning, before turning to the allocation of resources to meet customer needs. In addition, the book presents state-of-the-art research reflecting the lessons learned from the COVID-19 pandemic, and emerging, fast-paced developments in the digitalization of supply chain and operations management. Providing readers with a working knowledge of global supply chain and operations management, with a focus on bridging the gap between theory and practice, this textbook can be

used in core, specialized, and advanced classes alike. It is intended for a broad range of students and professionals in supply chain and operations management.

Global Supply Chain and Operations Management

Drive sustainable supply chain competitive advantage through more effective supplier management and procurement: reduce costs, improve quality, and deliver better service for all customers. This is the most authoritative, complete guide to planning, implementing, measuring, and optimizing supply management and procurement processes. Straight from the Council of Supply Chain Management Professionals (CSCMP), it brings together up-to-the-minute principles, strategies, and decisions for all relevant processes, strategies, and tactics. Step by step, The Definitive Guide to Supply Management and Procurement covers all this, and more: Basic supply management concepts, purposes, and goals Linkages between procurement and other business functions Day-to-day transactional and long-term strategic activities Category analysis, supplier selection, contract negotiation, supplier relationship management, and performance evaluation Principles and strategies for establishing efficient, effective, and sustainable operations, from sourcing teams to supplier rationalization Technology for spend analysis, competitive bidding, eProcurement, eSourcing, auctions/reverse auctions, contract compliance, performance management, and more Requirements and challenges of global sourcing, including insource vs. outsource decisions; TCO analysis; risk management; negotiations, and supplier contract compliance Best practices for assessing performance using standard metrics and frameworks

The Definitive Guide to Supply Management and Procurement

Dr. Trent presents a framework for achieving sustainable competitive advantages in price and cost, quality, cycle time, technology, flexibility, and customer responsiveness through progressive strategy supply management leadership.

Strategic Supply Management

Starting from the concept that "there is no point driving a Ferrari in a traffic jam\

Managing Global Supply Chains

Agile, strategic supply chain management is a key competitive necessity in today’s no-room-for-error business arena. And few organizations have acquired more knowledge—and demonstrated better results—than the team at global management consultancy Pittiglio, Rabin, Todd, and McGrath (PRTM). In the breakthrough reference Strategic Supply Chain Management, two of PRTM’s leading consultants in this practice explain everything that corporate decision-makers need to know to create value and competitive advantage from their supply chains.

Strategic Supply Chain

Learn what it takes to develop and have a "best-in-class" supply chain This new edition shows you how to build supply chains that work by illustrating how leading companies are doing it. Identifying world-class supply chains in more than a dozen different industries and explaining in detail how these companies got to where they are, this essential book reveals the proven strategies, solutions, and performance metrics used by leading companies to design their extended enterprises. Identifies proven strategies, solutions, and performance metrics for supply chain management best practice benchmarks Shows how to manage supply chains in a global marketplace and how to choose third-party providers New edition includes new chapters on green supply chains and lean supply chains, and expanded analysis of emerging technologies Includes coverage of supply chain metrics, planning and forecasting, procurement, manufacturing, transportation, globalization, customer service, collaboration, security, and workforce management Written by the Editorial Director of Penton Media's Supply Chain Group and a Contributing Editor to IndustryWeek magazine It also offers guidance on the latest technology, green supply chains, going lean, how to choose third-party logistics providers, and how to manage the supply chain in a global environment.

Supply Chain Management Best Practices

Jacobs and Chase continue to lead the field of Operations Management with cutting edge up-to-date content, technology, and motivation. Now, in this Second Edition Jacobs and Chase focus on the core concepts of operations and supply management. This condensed text was constructed with sections

on the four essential core areas—strategy, process management, supply chain management, and inventory and control (supply and demand planning). This set of four core areas was first suggested by a panel of OM instructor's at the Decision Science Institute meeting, and has been verified by market research which examined course syllabi from across the US. The Second Edition provides increased emphasis on supply management concepts, integrates sustainability as a strategic consideration, and includes updated company applications, problems, and cases.

Operations and Supply Management: The Core

The third edition of Operations and Supply Chain Management: The Core focuses on the important "core" concepts in the dynamic field of operations. Just as lava flows from the core of the earth, operations and supply chain management is the core of business. Material must flow through supply chain processes to create cash output and input. This new edition has an increased focus on supply chain analytics involving the analysis of data to better solve business problems. Connect is the only integrated learning system that empowers students by continuously adapting to deliver precisely what they need, when they need it, and how they need it, so that your class time is more engaging and effective.

Operations and Supply Chain Management: The Core

Everyone can impact the supply chain Supply Chain Management For Dummies helps you connect the dots between things like purchasing, logistics, and operations to see how the big picture is affected by seemingly isolated inefficiencies. Your business is a system, made of many moving parts that must synchronize to most efficiently meet the needs of your customers—and your shareholders. Interruptions in one area ripple throughout the entire operation, disrupting the careful coordination that makes businesses successful; that's where supply chain management (SCM) comes in. SCM means different things to different people, and many different models exist to meet the needs of different industries. This book focuses on the broadly-applicable Supply Chain Operations Reference (SCOR) Model: Plan, Source, Make, Deliver, Return, and Enable, to describe the basic techniques and key concepts that keep businesses running smoothly. Whether you're in sales, HR, or product development, the decisions you make every day can impact the supply chain. This book shows you how to factor broader impact into your decision making process based on your place in the system. Improve processes by determining your metrics Choose the right software and implement appropriate automation Evaluate and mitigate risks at all steps in the supply chain Help your business function as a system to more effectively meet customer needs We tend to think of the supply chain as suppliers, logistics, and warehousing—but it's so much more than that. Every single person in your organization, from the mailroom to the C-suite, can work to enhance or hinder the flow. Supply Chain Management For Dummies shows you what you need to know to make sure your impact leads to positive outcomes.

Supply Chain Management For Dummies

Audience: Core courses in Operations Management. Approach: First text to provide an integrated and comprehensive treatment of both operations and supply chain management. Competitors: Stevenson, Chase/Aquilano/Jacobs, Reid/Sanders, Finch, Burt/Dobler, and Russell/Taylor.

Introduction to Operations and Supply Chain Management

Master the fundamental concepts and applications of operations (OM) and supply chain management (SCM) with OPERATIONS AND SUPPLY CHAIN MANAGEMENT, 3E by award-winning authors Collier/Evans. This edition balances coverage of both manufacturing and service businesses with the latest updates, an additional new SCM chapter and new discussions that highlight the latest changes in OM and SCM. Clear explanations are supported with contemporary examples and new and updated case studies that demonstrate how concepts apply. Discussions highlight new techniques and principles as well as the most recent Excel techniques and digital tools. Solved problems further guide you through key formulas and computations. MindTap online learning platform is available for both manual calculations and the use of Excel spreadsheet templates and models. MindTap's algorithmic homework and interactive learning tools also show you how to apply qualitative and quantitative reasoning to today's OM and SCM concepts.

Operations and Supply Chain Management

High-Value Supply Chain Integration New research, practical priorities, actionable solutions Master new best practices for integrating demand, supply, and partners worldwide Bridge key “integration gaps” to maximize customer value and profit Improve performance in areas ranging from resource availability to returns From leading supply chain integration experts at the University of Tennessee’s Haslam College of Business In volatile, global environments, only well-integrated organizations can deliver superior customer outcomes and sustained profitability. Supply chain practitioners are on the frontlines of integration: they must bring together functions ranging from sales to logistics and a world of third-party suppliers. Integration is not easy, but proven solutions exist. In Achieving Supply Chain Integration, leading experts reveal what works and how to make it work. The authors and contributors clarify what supply chain integration really means, and why it’s even more crucial than many companies realize. You’ll learn how to manage core conflicts that make integration difficult, so you can maximize value to both customers and your organization. You’ll find example-based, research-driven insights for both internal and external integration, addressing issues ranging from culture to financial metrics. The authors share practical guidance on everything from building more innovative partner relationships to avoiding raw material shortages. Whatever your supply chain or operations responsibilities, you need to integrate more effectively, and this guide will help you do it. Supply chain integration can ensure a smoother, more efficient flow of products, and enable access to third-party resources and capabilities that would be costly or impossible to build internally. However, successful integration has proven challenging, especially as supply chains evolve to encompass even more external partners. Achieving Supply Chain Integration shows how to prioritize which processes and functions to integrate and select integration strategies likely to deliver the greatest performance benefits. Drawing on actual successes and failures, UT’s researchers illuminate best practices and common mistakes. They present proven approaches to integrating sales, marketing, core supply chain functions such as procurement and logistics, and widely diverse partner relationships. Whether you’re a practitioner or student, this guide will help you approach integration projects with “eyes open”–so you can mitigate risks and maximize value. Understanding what integration is and isn’t, and why it matters so much Bridging the integration gap to maximize value creation Fully leveraging information in internal and external integration Driving more value by integrating purchasing and logistics Aligning market, environmental, social, and political strategies Achieving deeper demand/supply integration Reducing product returns through better internal integration Building more innovative, collaborative supplier relationships

Global Macrotrends and Their Impact on Supply Chain Management

Warehouses are often seen as a necessary evil: places that stop the flow of goods and thus increase costs without adding value. But the truth is that they have a critical part to play in supply chain management, and warehouse managers should be centrally involved in the strategic aspects of any business. Excellence in Warehouse Management covers everything you need to know to manage warehouse operations as part of a streamlined and holistic system, fine-tuned to serve the customer and drive the bottom-line. With thinking points, self-assessment exercises and case studies Stuart Emmett challenges you to consider your own operations in a new way, and plot a course into the future.

Excellence in Warehouse Management

An Introduction to Operations Management: The Joy of Operations covers the core topics of operations management, including product and service design, processes, capacity planning, forecasting, inventory, quality, supply chain management, and project management. Das provides a clear, connected, and current view of operations management and how it relates to a firm’s strategic goals. Students will benefit from the real-world scenarios that foster an understanding of operations management tasks. Without relying heavily on statistics and mathematical derivations, the book offers applied models and a simple, predictable chapter format to make it easy to navigate. Students of introductory operations management courses will love this practical textbook. A companion website features an instructor’s manual with test questions, as well as additional exercises and examples for in-class use.

An Introduction to Operations Management

Businesses today are faced with avalanche of information. There is need to effectively manage information to serve customers better. In today's highly competitive environment, businesses need to be able to organize and coordinate their information so that a single view of information is maintained by all the service channels. Information management can help to understand customers? wants and needs and integrate such in product design. It helps to manage inventory and reduces both cost

and the cycle time to introduce new products to the marketplace. Time-to-market is a critical issue in achieving competitiveness and without the availability of timely and accurate information; it will not be possible to respond proactively to the changing market environment. This book is about ERP and Supply Chain Management. ERP is the short form for Enterprise Resource Planning. The aim of ERP is to integrate the functions of the different business units and departments such as finance, operations, accounting and human resources. This integration is necessary to organize and coordinate information that may be scattered in different departments and making them available in an organized format to the different decision centers where they may be needed. Through this integrative approach, the different functional units of the business are able to share a common database, exchange information, and have consistent view of their operations. This consistent view is also presented to the customer thus improving the quality of customer service. With the integration of the information system, the different functional departments work together to achieve common organizational goals and objectives. Without suchintegration, common customer services such as order processing would be difficult to track and inconsistent information may be relayed by the different departments to the customer. Supply chain management is an integral aspect of ERP. Businesses today focus on their core competence. It is no longer technically and economically feasible to focus on all activities. Rather, certain activities may be shifted to partners or vendors that have core competence in such areas. Mercedes Benz may find it better to subcontract its radios to Bose while focusing on its car designing. Yet, these two companies may need to share key information on customers? wants and needs as well as information on product designs. Integrating a supplier into the common database helps in providing quality products and services that will satisfy the needs of the customer. Information technology plays a critical role in effective development of ERP system. As many businesses develop online marketplace, it becomes even more important to develop a single view of transactions to all value chain partners including customers, manufacturer, suppliers and other vendors. This book therefore adopts a focus on ERP and Supply Chain Management to develop better plans to better serve the customer. It adopts a management and a systemic perspective of these issues and does not deal with the software aspects of ERP. The focus is on the fundamentals rather than on the advanced issues. The book is intended to help managers, executives, and students to understand the basic concepts of ERP and Supply Chain Management.

ERP and Supply Chain Management

This classic text discusses the role of logistics in achieving corporate and financial goals. It has become the bible of the logistics sector and a frequently-adopted text at top business schools. A proven market leader. Guaranteed high price seller. Successful crossover into practitioner and academic markets. Essential reading for logistics/operations managers and increasingly, managing the chain of demand is a growing area within marketing. Written by a top author and consultant in the field. New chapters on logistics value, integrated logistics, network logistics. Updated case studies throughout, from full international range of industries and companies including Dell, Wal-mart (vs K-Mart), Zara, GE Capital, Li & Fung (Hong Kong), Hewett Packard, Dyson and Nokia. Enhanced by diagrams and chapter summaries.

Logistics and Supply Chain Management

Complete best practices for running high-value supply chains and earning elite CSCMP certification… 8 authoritative books, in convenient e-format, at a great price! 8 authoritative books help you plan, manage, and optimize any supply chain -- and systematically prepare for CSCMP's industry-leading certification Master crucial knowledge for earning industry-leading CSCMP Level One SCPro™cer-tification: demonstrate your skills in planning and managing world-class supply chains! This unique 8 eBook package will be an indispensable resource for supply chain professionals and students in any organization or environment. It contains 7 complete books commissioned by Council of Sup-ply Chain Management Professionals (CSCMP), the preeminent worldwide professional association dedicated to advancing and disseminating SCM research and knowledge. CSCMP's Definitive Guide to Integrated Supply Chain Management is your definitive reference to managing supply chains that improve customer service, reduce costs, and enhance business performance. Clearly and concisely, it introduces modern best practices for organizations of all sizes, types, and industries. Next, this package contains six eBooks fully addressing core areas of CSCMP Level One SCPro™ certification: man-ufacturing/service operations; warehousing; supply management/procurement; transportation; order fulfillment/customer service, and inventory management. All six offer focused coverage of essential technical and behavioral skills, addressing principles, elements, strategies, tactics, processes, busi-

ness interactions/linkages, technologies, planning, management, measurement, global operations, and more. The Definitive Guide to Manufacturing and Service Operations introduces complete best practices for planning, organizing, and managing the production of products and services. Itintroduces key terminology, roles, and goals; techniques for planning and scheduling facilities, material, and labor; continuous process and quality improvement methods; sustainability; MRP II, DRP, and other technologies; and more. Next, The Definitive Guide to Warehousing helps you optimize all facets of warehousing, step by step. It explains each warehousing option, storage and handling operations, strategic planning, and the effects of warehousing decisions on total logistics costs and customer service. It covers product and materials handling, labor management, warehouse support, extended value chain processes, facility ownership, planning, strategy decisions, warehouse management systems, Auto-ID, AGVs, and more. The Definitive Guide to Supply Management and Procurement helps you drive sustainable competitive advantage via better supplier management and procurement. It covers transactional and long-term activities; category analysis, supplier selection, contract negotiation, relationship management, performance evaluation/management; sustainability; spend analysis, competitive bidding, eProcurement, eSourcing, auctions/reverse auctions, contract compliance, global sourcing, and more. The Definitive Guide to Transportation is today's most authoritative guide to world-class supply chain transportation. Its coverage includes: transportation modes, execution, and control; outsourcing, modal and carrier selection, and 3PLs; TMS technologies; ocean shipping, international air, customs, and regulation; and more. The Definitive Guide to Order Fulfillment and Customer Service covers all facets of building and operating world-class supply chain order fulfillment and customer service processes, from initial customer inquiry through post sales service and support. It introduces crucial concepts ranging from order cycles to available-to-promise, supply chain RFID to global order capture networks, guiding you in optimizing every customer contact you make. CSCMP's The Definitive Guide to Inventory Management addresses all the technical and behavioral skills needed for success in any inventory management role. It illuminates planning, organizing, controlling, directing, motivating and coordinating every activity required to efficiently control product flow. You'll find best-practice coverage for making long-term strategic decisions; mid-term tactical decisions; and short-term operational decisions. Topics discussed range from VMI and inventory reduction to new challenges in global inventory management. Finally, in Demand and Supply Integration: The Key to World-Class Demand Forecasting, Mark A. Moon helps you effectively integrate demand forecasting within a comprehensive, world-class Demand and Supply Integration (DSI) process. Moon shows how to approach demand forecasting as a management process; choose and apply the best qualitative and quantitative techniques; and create demand forecasts that are far more accurate and useful. If you're tasked with driving more value from your supply chain, this collection offers you extraordinary resources -- and unsurpassed opportunities. From world-renowned supply chain experts Brian J. Gibson, Joe B. Hanna, C. Clifford Defee, Haozhe Chen, Nada Sanders, Scott B. Keller, Brian C. Keller, Wendy L. Tate, Thomas J. Goldsby, Deepak Iyengar, Shashank Rao, Stanley E. Fawcett, Amydee M. Fawcett, Matthew A. Waller, Terry L. Esper and Mark A. Moon

CSCMP Certification Collection

In today's environment of tight budgets and even tighter turnarounds, effective supply-chain management has become a core business requirement. Managing the Supply Chain adapts the number one supply-chain book on the college market to examine how professionals can consistently turn supply-chain strategy into a competitive advantage. This results-based book examines the experiences of today's most accomplished companies to demonstrate supply-chain innovation at work in the marketplace.

Operations Management

The Fourth Edition of Purchasing and Supply Chain Management continues its tradition of examining purchasing as it relates to other functions and systems within the organization such as marketing, logistics, and operations. Author WC Benton uses a step-by-step approach, helping students understand the tools to make analysis-driven purchasing decisions. Key Features: - Fully updated to reflect the latest trends in the field - Real-world examples and cases illustrate key purchasing concepts and strategies - Chapters devoted to special purchasing applications in transportation, equipment, health care, and other professional services

Managing the Supply Chain

Operations Management: Managing Global Supply Chains takes a holistic, integrated approach to managing operations and supply chains by exploring the strategic, tactical, and operational decisions and challenges facing organizations worldwide. Authors Ray R. Venkataraman and Jeffrey K. Pinto address sustainability in each chapter, showing that sustainable operations and supply chain practices are not only attainable, but are critical and often profitable practices for organizations to undertake. With a focus on critical thinking and problem solving, Operations Management provides students with a comprehensive introduction to the field and equips them with the tools necessary to thrive in today's evolving global business environment.

Purchasing and Supply Chain Management

This is the perfect field manual for every supply chain or operations management practitioner and student. The field's only single-volume reference, it's uniquely convenient and uniquely affordable. With nearly 1,500 well-organized definitions, it can help students quickly map all areas of operations and supply chain management, and prepare for case discussions, exams, and job interviews. For instructors, it serves as an invaluable desk reference and teaching aid that goes far beyond typical dictionaries. For working managers, it offers a shared language, with insights for improving any process and supporting any training program. It thoroughly covers: accounting, customer service, distribution, e-business, economics, finance, forecasting, human resources, industrial engineering, industrial relations, inventory management, healthcare management, Lean Sigma/Six Sigma, lean thinking, logistics, maintenance engineering, management information systems, marketing/sales, new product development, operations research, organizational behavior/management, personal time management, production planning and control, purchasing, reliability engineering, quality management, service management, simulation, statistics, strategic management, systems engineering, supply and supply chain management, theory of constraints, transportation, and warehousing. Multiple figures, graphs, equations, Excel formulas, VBA scripts, and references support both learning and application. ... this work should be useful as a desk reference for operations management faculty and practitioners, and it would be highly valuable for undergraduates learning the basic concepts and terminology of the field. Reprinted with permission from CHOICE http: //www.cro2.org, copyright by the American Library Association.

Operations Management

The third edition of Operations and Supply Chain Management: The Core focuses on the important "core" concepts in the dynamic field of operations. Just as lava flows from the core of the earth, operations and supply chain management is the core of business. Material must flow through supply chain processes to create cash output and input. This new edition has an increased focus on supply chain analytics involving the analysis of data to better solve business problems. Connect is the only integrated learning system that empowers students by continuously adapting to deliver precisely what they need, when they need it, and how they need it, so that your class time is more engaging and effective.

The Encyclopedia of Operations Management

The seventh edition of Operations and Supply Chain Management for MBAs is the definitive introduction to the fundamental concepts of supply chain and operations management. Designed specifically to meet the needs of MBA students, this market-leading book offers clear presentation of topics such process planning and design, capacity and location planning, schedule and inventory management, and enterprise resource planning. A strategic, conceptual approach helps readers comprehend the contemporary issues they will soon be facing in industry. This concisely-formatted volume enables instructors to customize their courses for the unique requirements of MBA programs. Each chapter integrates material directly into the textrather than sidebars, highlights, and other pedagogical devicesto achieve a smooth, easy-to-read narrative flow. Carefully selected questions prompt discussions that complement the mature, more experienced nature of MBA students, while case studies and supplementary materials illustrate key concepts and practices. Topics such as outsourcing and global sourcing, the role of information technology, and global competitiveness strategies assist students to understand working and competing in the globalized economy.

Loose-leaf Version Operations and Supply Chain Management The Core

In this latest edition of Supply Chain Excellence, the authors provide tools for measuring financial gains linked to value chain optimisation. (Business Digest, March 2012). To keep your sales, manufacturing, distribution, and inventory moving in perfect synchronization, you need a flawless, repeatable supply chain improvement approach that maximizes process efficiency, eliminates dysfunction, and aligns disparate organizations-globally.

Operations and Supply Chain Management for MBAs

"Purchasing Principles and Management" provides comprehensive coverage of this dynamic subject area in a single book. A clear and easy to read guide based on current good practice, it also explores the latest developments in ideas and approach. ""Essential reading for the practitioner or student of the subject - this book remains the standard text." -" "Professor Peter Hines, Cardiff University." The four sections cover every aspect of purchasing: Objectives and organisation - focuses on strategic themes, and the scope of purchasing activity Key considerations - covers essential tactical issues, including quality and price Specialised aspects - deals with activities and applications, including the latest developments in new technology and e-commerce Systems and Control - highlights personnel and performance, and explores the future direction of purchasing. 'Practice Notes' throughout the text help the reader apply the concepts to commercial and industrial practice across all sectors and this ninth edition includes improved coverage of Supply Chain Management and addresses international issues throughout. Peter Baily, former Chief Examiner for CIPS David Farmer, Henley Management College David Jessop, formerly University of Glamorgan David Jones, Blackburn College ""Nobody reading this text will be in any doubt that purchasing and supply are core to the business strategy of an organisation. This is an excellent text that should be required reading for students and managers alike" - Steve Brown Professor of Operations Management, University of Exeter " "Purchasing Principles and Management" is published in association with the Chartered Institute of Purchasing and Supply (CIPS), which is the central reference point for the purchasing and supply profession. Details about courses, conferences and other services are available at www.cips.org

Supply Chain Excellence

The Fifth Edition of Operations and Supply Chain Management: The Core, focuses on the important core concepts in the dynamic field of operations. Just as lava flows from the core of the earth, operations and supply chain management is the core of business. Material must flow through supply chain processes to create cash output and input. This new edition has an increased focus on supply chain analytics involving the analysis of data to better solve business problems.

Purchasing Principles and Management

The secrets to improving operations while maintaining the highest quality How do you operate at maximum efficiency with minimum cost? Manager’s Guide to Operations Management addresses one of the most pressing business issues of our time by offering easy-toimplement advice on creating the most effective, streamlined operations possible. This quick-reference guide explains how to: Improve your production processes Boost quality using the Six Sigma approach Manage supply chains and inventory Forecast, plan, and schedule efficiently With Manager’s Guide to Operations Management, you have the tools you need to ensure a smooth, steady work flow while producing products and services of the highest quality—the secret to business success.

Operations and Supply Management

For courses in operations management. A broad introduction to operations, reinforced with extensive practice problems Principles of Operations Management: Sustainability and Supply Chain Management presents a broad introduction to the field of operations in a realistic and practical manner, while offering the largest and most diverse collection of issues on the market. Problems found in the 11th Edition contain ample support -- found in the book’s solved-problems and worked examples -- to help readers better understand concepts important to today’s operations management professionals. This text is available in two versions: Operations Management, 13th Edition, a hardcover, and Principles of Operations Management, 11th Edition, a paperback. Both books include the identical core Chapters 1—17. However, Operations Management, 13th Edition also includes a Part IV with seven business analytics modules.

Loose Leaf for Operations and Supply Chain Management: The Core

Fully grasp the core principles of logistics, distribution management and the supply chain, in addition to emerging trends and the latest technologies, with this definitive guide that offers clear and straight-forward explanations. The Handbook provides practitioners and students with a complete, step-by-step overview of the many different aspects of setting up, managing and optimizing supply chains. Designed to offer a full appreciation of how supply chains are planned and operated, it is structured logically and delves into topics in more clarity and detail than disparate collections of research papers. Integrating both strategic and tactical insights, this textbook is underpinned throughout by real-world data and worked examples that bring the concepts to life. The seventh edition offers: Updates and solutions designed to meet the challenges faced by those studying and working in the sector New coverage of future supply chain related technologies, including artificial intelligence, data analytics, digital twins and autonomous mobile robots and how these can be used to optimize operations and increase productivity Online resources including lecture slides (tables, images and formulae from the text), acronyms and abbreviations and infographics. Written by an author team with extensive practical experience in some of the most challenging environments across the world, this seminal text is an invaluable resource for both practitioners and students, providing a useful desk reference for topics across the wide ranging and vitally important fields of logistics and the supply chain.

Manager's Guide to Operations Management

Introduction to Operations Management: A Supply Chain Process Approach details how firms buy, make, deliver, and return goods and services around the globe, providing students with a solid foundation of operations management concepts and techniques. The text offers a set of activities that guide the effectiveness of organizations and prepare operations managers and other employees to ensure their firms are competitive. The book is organized from a strategic to a tactical perspective, beginning with foundational concepts and ending with broader discussions of managing supply chains. Dedicated chapters address corporate strategy, services design, inventory management, aggregate planning, forecasting, lean systems, quality management, integrating processes along the supply chain, and more. Numerous real-world examples, cases, and engaging exercises allow students to place themselves in the shoes of working operations management professionals. The second edition features examples of real companies using analytical tools in decision-making situations, as well as extensive web-based content including flashcards, YouTube videos, and graded chapter quizzes. The textbook's coverage also includes emerging trends for most chapters, such as sustainability, customer relationships, and working in the global marketplace. Written for today's students and the exciting, ever-evolving marketplace, the second edition of Introduction to Operations Management is the text to bring operations management into the modern era.

Principles of Operations Management: Sustainability and Supply Chain Management, Global Edition

Managing Operations Across the Supply Chain offers a global, supply chain perspective of operations management—a treatment that embraces the foundations of operations management but includes new frameworks, concepts, and tools to address the demands of today and changing needs of the future. We live in dynamic and exciting times due to many changes affecting nearly every aspect of business-including operations management. This third edition reflects key shifts in operations management. Connect is the only integrated learning system that empowers students by continuously adapting to deliver precisely what they need, when they need it, and how they need it, so that your class time is more engaging and effective.

The Handbook of Logistics and Distribution Management

When work began on the first volume ofthis text in 1992, the science of dis tribution management was still very much a backwater of general manage ment and academic thought. While most of the body of knowledge associated with calculating EOQs, fair-shares inventory deployment, productivity curves, and other operations management techniques had long been solidly established, new thinking about distribution management had taken a definite back-seat to the then dominant interest in Lean thinking, quality management, and business process reengineering and their impact on manufacturing and service organizations. For the most part, discussion relating to the distri bution function centered on a fairly recent concept called Logistics Manage ment. But, despite talk of how logistics could be used to integrate internal and external business functions and even be considered a source of com petitive advantage on its own, most of the focus remained on how companies could utilize operations management techniques to optimize the traditional day-to-day shipping and receiving functions in order

to achieve cost contain ment and customer fulfillment objectives. In the end, distribution manage ment was, for the most part, still considered a dreary science, concerned with oftransportation rates and cost trade-offs. expediting and the tedious calculus Today, the science of distribution has become perhaps one of the most im portant and exciting disciplines in the management of business.

Introduction to Operations Management:

Managing Operations Across the Supply Chain

Proton Therapy Physics, Second Edition

Expanding on the highly successful first edition, this second edition of Proton Therapy Physics has been completely restructured and updated throughout, and includes several new chapters. Suitable for both newcomers in medical physics and more seasoned specialists in radiation oncology, this book provides an in-depth overview of the physics of this radiation therapy modality, eliminating the need to dig through information scattered across medical physics literature. After tracing the history of proton therapy, the book explores the atomic and nuclear physics background necessary for understanding proton interactions with tissue. The text then covers dosimetry, including beam delivery, shielding aspects, computer simulations, detector systems and measuring techniques for reference dosimetry. Important for daily operations, acceptance testing, commissioning, quality assurance and monitor unit calibrations are outlined. The book moves on to discussions of treatment planning for single- and multiple-field uniform doses, dose calculation concepts and algorithms, and precision and uncertainties for nonmoving and moving targets. Imaging for treatment guidance as well as treatment monitoring is outlined. Finally, the biological implications of using protons from a physics perspective are discussed. This book is an ideal practical guide for physicians, dosimetrists, radiation therapists, and physicists who already have some experience in radiation oncology. It is also an invaluable reference for graduate students in medical physics programs, physicians in their last year of medical school or residency, and those considering a career in medical physics. Features: Updated with the latest technologies and methods in the field, covering all delivery methods of proton therapy, including beam scanning and passive scattering Discusses clinical aspects, such as treatment planning and quality assurance Offers insight on the past, present, and future of proton therapy from a physics perspective

Proton Therapy Physics

Proton Therapy Physics goes beyond current books on proton therapy to provide an in-depth overview of the physics aspects of this radiation therapy modality, eliminating the need to dig through information scattered in the medical physics literature. After tracing the history of proton therapy, the book summarizes the atomic and nuclear physics background necessary for understanding proton interactions with tissue. It describes the physics of proton accelerators, the parameters of clinical proton beams, and the mechanisms to generate a conformal dose distribution in a patient. The text then covers detector systems and measuring techniques for reference dosimetry, outlines basic quality assurance and commissioning guidelines, and gives examples of Monte Carlo simulations in proton therapy. The book moves on to discussions of treatment planning for single- and multiple-field uniform doses, dose calculation concepts and algorithms, and precision and uncertainties for nonmoving and moving targets. It also examines computerized treatment plan optimization, methods for in vivo dose or beam range verification, the safety of patients and operating personnel, and the biological implications of using protons from a physics perspective. The final chapter illustrates the use of risk models for common tissue complications in treatment optimization. Along with exploring quality assurance issues and biological considerations, this practical guide collects the latest clinical studies on the use of protons in treatment planning and radiation monitoring. Suitable for both newcomers in medical physics and more seasoned specialists in radiation oncology, the book helps readers understand the uncertainties and limitations of precisely shaped dose distribution.

Advances in Particle Therapy

Hadron therapy is a groundbreaking new method of treating cancer. Boasting greater precision than other therapies, this therapy is now utilised in many clinical settings and the field is growing. More than 50 medical facilities currently perform (or are planned to perform) this treatment, with this number set to double by 2020. This new text covers the most recent advances in hadron therapy, exploring the physics, technology, biology, diagnosis, clinical applications, and economics behind the therapy.

Providing essential and up-to-date information on recent developments in the field, this book will be of interest to current and aspiring specialists from a wide range of backgrounds. Features: Multidisciplinary approach: explores the physics, IT (big data), biology, clinical applications from imaging to treatment, clinical trials, and economics associated with hadron therapy Contains the latest research and developments in this rapidly evolving field, and integrates them into the current global challenges for radiation therapy Edited by recognised leaders in the field, including the co-ordinator of ENLIGHT (the European Network for Light Ion Hadron Therapy), with chapter contributions from international leading experts in the field

The Physics of Conformal Radiotherapy

The Physics of Conformal Radiotherapy: Advances in Technology provides a thorough overview of conformal radiotherapy and biological modeling, focusing on the underlying physics and methodology of three-dimensional techniques in radiation therapy. This carefully written, authoritative account evaluates three-dimensional treatment planning, optimization, photon multileaf collimation, proton therapy, transit dosimetry, intensity-modulation techniques, and biological modeling. It is an invaluable teaching guide and reference for all medical physicists and radiation oncologists/therapists that use conformal radiotherapy.

Advanced and Emerging Technologies in Radiation Oncology Physics

This new book educates readers about new technologies before they appear in hospitals, enabling medical physicists and clinicians to prepare for new technologies thoroughly and proactively, and provide better patient care once new equipment becomes available. Emerging technologies in imaging, treatment planning, treatment delivery, dosimetry and informatics are all discussed. The book is divided into three parts: recently developed technologies available for practice; technologies under development nearing completion; and technologies in an early stage of development that could have potential radiotherapy applications. Features: Introduces emerging technologies in imaging, treatment planning, treatment delivery, dosimetry and informatics The advantages and limitations of each technology in clinical settings are discussed, and recommendations on how to adopt the technologies are provided Critiques and improvement points are provided for researchers, in addition to suggestions on how to prepare quality assurance are provided as needed

Monte Carlo in Heavy Charged Particle Therapy

This book explores the current difficulties and unsolved problems in the field of particle therapy and, after analysing them, discusses how (and if) innovative Monte Carlo approaches can be used to solve them. Each book chapter is dedicated to a different sub-discipline, including multi-ion treatments, flash-radiotherapy, laser-accelerated beams, nanoparticles effects, binary reactions to enhance radiobiology, and space-related issues. This is the first book able to provide a comprehensive insight into this exciting field and the growing use of Monte Carlo in medical physics. It will be of interest to graduate students in medicine and medical physics, in addition to researchers and clinical staff. Key Features: Explores the exciting and interdisciplinary topic of Monte Carlo in particle therapy and medicine. Addresses common challenges in the field. Edited by an authority on the subject, with chapter contributions from specialists. Pablo Cirrone is a medical physicist and researcher at the Laboratori Nazionali del Sud of INFN, Italy, where he supports and coordinates various experimental groups. Dr. Cirrone is an expert in the use of proton and ion in radiation treatment and of absolute and relative dosimetry in electron, photon and ion beam. He is an expert in the development and test of detectors for medical applications, of the production and use of laser-driven beams for medical and multidisciplinary applications and recipient of the Michael Gotein Award. He is active on many scientific committees and organizes national and international conferences. Giada Petringa is a researcher at the Laboratori Nazionali del Sud of INFN, Italy. Dr. Petringa has a professional experience in the field of Monte Carlo simulations for medical applications, dosimetry, microdosimetry, and diagnostics with conventional and laser-driven proton beams. In 2019 she had a MSCA-IF-2019 (Marie Sklodowska-Curie Actions-Individual Fellowship) grant funded by the European Community in the framework of the H2020 program. She is a member of the Editorial Board of the international journal Physica Medica - European Journal of Medical. She organized more than fifteen international Geant4 Schools. She is an official member of the Geant4 code Collaboration at CERN since 2019. She is a code developer, and she collaborates to maintain two of the official examples of the code.

The Physics of Three Dimensional Radiation Therapy

The Physics of Three Dimensional Radiation Therapy presents a broad study of the use of three-dimensional techniques in radiation therapy. These techniques are used to specify the target volume precisely and deliver radiation with precision to minimize damage to surrounding healthy tissue. The book discusses multimodality computed tomography, complex treatment planning software, advanced collimation techniques, proton radiotherapy, megavoltage imaging, and stereotactic radiosurgery. A review of the literature, numerous questions, and many illustrations make this book suitable for teaching a course. The themes covered in this book are developed and expanded in Webb's The Physics of Conformal Radiotherapy and the two may be used together or in successive semesters for teaching purposes.

Protontherapy Versus Carbon Ion Therapy

This book presents a comparison analysis of two cancer treatment therapies: carbon ion therapy and protontherapy. It is divided in 5 sections. The first ones gives the reader a brief history of Radiotherapy and types of radiation. In the second section, the techniques and equipments, including new ones in development such as Cyclinac , Laser and DWA, are described. The third section describes biophysical (such as stopping power and LET) and biological (such as RBE and OER) properties, the fundamental experiments and clinical area. The fourth section presents models and the fifth section compares both techniques, showing advantages and disadvantages of each, and their similarities.

Modelling Radiotherapy Side Effects

The treatment of a patient with radiation therapy is planned to find the optimal way to treat a tumour while minimizing the dose received by the surrounding normal tissues. In order to better exploit the possibilities of this process, the availability of accurate and quantitative knowledge of the peculiar responses of the different tissues is of paramount importance. This book provides an invaluable tutorial for radiation oncologists, medical physicists, and dosimetrists involved in the planning optimization phase of treatment. It presents a practical, accessible, and comprehensive summary of the field’s current research and knowledge regarding the response of normal tissues to radiation. This is the first comprehensive attempt to do so since the publication of the QUANTEC guidelines in 2010. Features: Addresses the lack of systemization in the field, providing educational materials on predictive models, including methods, tools, and the evaluation of uncertainties Collects the combined effects of features, other than dose, in predicting the risk of toxicity in radiation therapy Edited by two leading experts in the field

Ion Beam Therapy

The book provides a detailed, up-to-date account of the basics, the technology, and the clinical use of ion beams for radiation therapy. Theoretical background, technical components, and patient treatment schemes are delineated by the leading experts that helped to develop this field from a research niche to its current highly sophisticated and powerful clinical treatment level used to the benefit of cancer patients worldwide. Rather than being a side-by-side collection of articles, this book consists of related chapters. It is a common achievement by 76 experts from around the world. Their expertise reflects the diversity of the field with radiation therapy, medical and accelerator physics, radiobiology, computer science, engineering, and health economics. The book addresses a similarly broad audience ranging from professionals that need to know more about this novel treatment modality or consider to enter the field of ion beam therapy as a researcher. However, it is also written for the interested public and for patients who might want to learn about this treatment option.

Radiation Oncology: A Physicist's-Eye View

The papers collected in this hugely useful volume cover the principle physical and biological aspects of radiation therapy and in addition, address practical clinical considerations in the planning and delivering of that therapy. The importance of the assessment of uncertainties is emphasized. Topics include an overview of the physics of the interactions of radiation with matter and the definition of the goals and the design of radiation therapy approaches.

Tutorials in Radiotherapy Physics

The Topics Every Medical Physicist Should Know Tutorials in Radiotherapy Physics: Advanced Topics with Problems and Solutions covers selected advanced topics that are not thoroughly discussed in any of the standard medical physics texts. The book brings together material from a large variety of sources, avoiding the need for you to search through and digest the vast research literature. The topics are mathematically developed from first principles using consistent notation. Clear Derivations and In-Depth Explanations The book offers insight into the physics of electron acceleration in linear accelerators and presents an introduction to the study of proton therapy. It then describes the predominant method of clinical photon dose computation: convolution and superposition dose calculation algorithms. It also discusses the Boltzmann transport equation, a potentially fast and accurate method of dose calculation that is an alternative to the Monte Carlo method. This discussion considers Fermi–Eyges theory, which is widely used for electron dose calculations. The book concludes with a step-by-step mathematical development of tumor control and normal tissue complication probability models. Each chapter includes problems with solutions given in the back of the book. Prepares You to Explore Cutting-Edge Research This guide provides you with the foundation to read review articles on the topics. It can be used for self-study, in graduate medical physics and physics residency programs, or in vendor training for linacs and treatment planning systems.

The Phantoms of Medical and Health Physics

The purpose and subject of this book is to provide a comprehensive overview of all types of phantoms used in medical imaging, therapy, nuclear medicine and health physics. For ionizing radiation, dosimetry with respect to issues of material composition, shape, and motion/position effects are all highlighted. For medical imaging, each type of technology will need specific materials and designs, and the physics and indications will be explored for each type. Health physics phantoms are concerned with some of the same issues such as material heterogeneity, but also unique issues such as organ-specific radiation dose from sources distributed in other organs. Readers will be able to use this book to select the appropriate phantom from a vendor at a clinic, to learn from as a student, to choose materials for custom phantom design, to design dynamic features, and as a reference for a variety of applications. Some of the information enclosed is found in other sources, divided especially along the three categories of imaging, therapy, and health physics. To our knowledge, even though professionally, many medical physicists need to bridge the three catagories described above.

Handbook of Anatomical Models for Radiation Dosimetry

Over the past few decades, the radiological science community has developed and applied numerous models of the human body for radiation protection, diagnostic imaging, and nuclear medicine therapy. The Handbook of Anatomical Models for Radiation Dosimetry provides a comprehensive review of the development and application of these computational models, known as "phantoms." An ambitious and unparalleled project, this pioneering work is the result of several years of planning and preparation involving 64 authors from across the world. It brings together recommendations and information sanctioned by the International Commission on Radiological Protection (ICRP) and documents 40 years of history and the progress of those involved with cutting-edge work with Monte Carlo Codes and radiation protection dosimetry. This volume was in part spurred on by the ICRP’s key decision to adopt voxelized computational phantoms as standards for radiation protection purposes. It is an invaluable reference for those working in that area as well as those employing or developing anatomical models for a a number of clinical applications. Assembling the work of nearly all major phantom developers around the world, this volume examines: The history of the research and development in computational phantoms Detailed accounts for each of the well-known phantoms, including the MIRD-5, GSF Voxel Family Phantoms, NCAT, UF Hybrid Pediatric Phantoms, VIP-Man, and the latest ICRP Reference Phantoms Physical phantoms for experimental radiation dosimetry The smallest voxel size (0.2 mm), phantoms developed from the Chinese Visible Human Project Applications for radiation protection dosimetry involving environmental, nuclear power plant, and internal contamination exposures Medical applications, including nuclear medicine therapy, CT examinations, x-ray radiological image optimization, nuclear medicine imaging, external photon and proton treatments, and management of respiration in modern image-guided radiation treatment Patient-specific phantoms used for radiation treatment planning involving two Monte Carlo code systems: GEANT4 and EGS Future needs for research and development Related data sets are available for download on the authors’ website. The breadth and depth of this work enables readers to obtain a unique sense of the complete scientific process in computational phantom development, from the conception of an idea, to the identification of original

anatomical data, to solutions of various computing problems, and finally, to the ownership and sharing of results in this groundbreaking field that holds so much promise.

Protontherapy Versus Carbon Ion Therapy

This book presents a comparison analysis of two cancer treatment therapies: carbon ion therapy and protontherapy. It is divided in 5 sections. The first ones gives the reader a brief history of Radiotherapy and types of radiation. In the second section, the techniques and equipments, including new ones in development such as Cyclinac , Laser and DWA, are described. The third section describes biophysical (such as stopping power and LET) and biological (such as RBE and OER) properties, the fundamental experiments and clinical area. The fourth section presents models and the fifth section compares both techniques, showing advantages and disadvantages of each, and their similarities.

On-Treatment Verification Imaging

On-treatment verification imaging has developed rapidly in recent years and is now at the heart of image-guided radiation therapy (IGRT) and all aspects of radiotherapy planning and treatment delivery. This is the first book dedicated to just this important topic, which is written in an accessible manner for undergraduate and graduate therapeutic radiography (radiation therapist) students and trainee medical physicists and clinicians. The later sections of the book will also help established medical physicists, therapeutic radiographers, and radiation therapists familiarise themselves with developing and cutting-edge techniques in IGRT. Features: Clinically focused and internationally applicable; covering a wide range of topics related to on-treatment verification imaging for the study of IGRT Accompanied by a library of electronic teaching and assessment resources for further learning and understanding Authored by experts in the field with over 18 years' experience of pioneering the original forms of on-treatment verification imaging in radiotherapy (electronic portal imaging) in clinical practice, as well as substantial experience of teaching the techniques to trainees

A Guide to Outcome Modeling In Radiotherapy and Oncology

This book explores outcome modeling in cancer from a data-centric perspective to enable a better understanding of complex treatment response, to guide the design of advanced clinical trials, and to aid personalized patient care and improve their quality of life. It contains coverage of the relevant data sources available for model construction (panomics), ranging from clinical or preclinical resources to basic patient and treatment characteristics, medical imaging (radiomics), and molecular biological markers such as those involved in genomics, proteomics and metabolomics. It also includes discussions on the varying methodologies for predictive model building with analytical and data-driven approaches. This book is primarily intended to act as a tutorial for newcomers to the field of outcome modeling, as it includes in-depth how-to recipes on modeling artistry while providing sufficient instruction on how such models can approximate the physical and biological realities of clinical treatment. The book will also be of value to seasoned practitioners as a reference on the varying aspects of outcome modeling and their current applications. Features: Covers top-down approaches applying statistical, machine learning, and big data analytics and bottom-up approaches using first principles and multi-scale techniques, including numerical simulations based on Monte Carlo and automata techniques Provides an overview of the available software tools and resources for outcome model development and evaluation, and includes hands-on detailed examples throughout Presents a diverse selection of the common applications of outcome modeling in a wide variety of areas: treatment planning in radiotherapy, chemotherapy and immunotherapy, utility-based and biomarker applications, particle therapy modeling, oncological surgery, and the design of adaptive and SMART clinical trials

Advances in Accelerators and Medical Physics

Radiotherapy is now one of the major cancer treatments. The field of accelerator and medical physics is important and growing to support high precision cancer radiotherapy. Advances in Accelerators and Medical Physics provides in-depth and comprehensive coverage of the basic concepts in x-ray therapy, electron beam therapy, particle therapy, boron neutron capture therapy, and molecular imaging and therapy. Novel technologies such as FLASH therapy and laser ion accelerator are also introduced. Each section of the book presents the current state of accelerators, irradiation methods and therapy technologies, as well as future trends in advanced research. This book will serve as a key resource for researchers and students to find all information on latest cancer radiotherapy technologies and methods. Offers a deep dive into fundamental accelerator and medical physics techniques and

technologies used in cancer radiotherapy Considers updated status at hospitals and clinical facilities, and future research trends Covers advanced research, development and novel technologies Chapters written by experts from the Particle Accelerator Society of Japan(PASJ) and the Japan Society of Medical Physics (JSMP)

Monte Carlo Techniques in Radiation Therapy

Modern cancer treatment relies on Monte Carlo simulations to help radiotherapists and clinical physicists better understand and compute radiation dose from imaging devices as well as exploit four-dimensional imaging data. With Monte Carlo-based treatment planning tools now available from commercial vendors, a complete transition to Monte Carlo-base

Radiochromic Film

This book provides a first authoritative text on radiochromic film, covering the basic principles, technology advances, practical methods, and applications. It focuses on practical uses of radiochromic film in radiation dosimetry for diagnostic x-rays, brachytherapy, radiosurgery, external beam therapies (photon, electron, protons), stereotactic body radiotherapy, intensity-modulated radiotherapy, and other emerging radiation technologies. The expert authors address basic concepts, advantages, and the main applications including kilovoltage, brachytherapy, megavoltage, electron beam, proton beam, skin dose, in vivo dosimetry, postal and clinical trial dosimetry. The final chapters discuss the state of the art in microbeam, synchrotron radiation, and ultraviolet radiation dosimetry.

Radiotherapy and Brachytherapy

This book reports the majority of lectures given during the NATO Advanced Study Institute ASI-982996, which was held at the European Scientific Institute of Archamps (ESI, Archamps – France) from November 15 to November 27, 2007. The ASI course was structured in two parts: the first was dedicated to what is often called “teletherapy”, i. e. radiotherapy with external beams, while the second focused on internal radiotherapy, also called “brachytherapy” or “curietherapy” in honour of Madame Curie who initiated the technique about a century ago. This ASI took place after the European School of Medical Physics, which devoted a 3 week period to medical imaging, a subject complementary to the topics of this book. Courses devoted to nuclear medicine and digital imaging techniques are collected in two volumes of the NATO Science Series entitled “Physics for Medical Imaging Applications” (ISBN 978-1-4020-5650-5) and “Molecular imaging: computer reconstruction and practice” (ISBN 978-1-4020- 8751-6). Every year in autumn ESI organises the European School of Medical Physics, which covers a large spectrum of topics ranging from Medical Imaging to Radiotherapy, over a period of 5 weeks. Thanks to the Cooperative Science and Technology sub-programme of the NATO Science Division, weeks four and five were replaced this year by the ASI course dedicated to “Physics of Modern Radiotherapy & Brachytherapy”. This allowed the participation of experts and students from 20 different countries, with diverse cultural background and p- fessional experience.

Monte Carlo Techniques in Radiation Therapy

Targets both students or professionals, both novice and experienced, in medical radiotherapy physics. Combines overviews of development, methods and references to facilitate Monte Carlo studies. Focuses on applications in radiotherapy.

Quality and Safety in Radiotherapy

The first text to focus solely on quality and safety in radiotherapy, this work encompasses not only traditional, more technically oriented, quality assurance activities, but also general approaches of quality and safety. It includes contributions from experts both inside and outside the field to present a global view. The task of assuring quality is no longer viewed solely as a technical, equipment-dependent endeavor. Instead, it is now recognized as depending on both the processes and the people delivering the service. Divided into seven broad categories, the text covers: Quality Management and Improvement includes discussions about lean thinking, process control, and access to services. Patient Safety and Managing Error looks at reactive and prospective error management techniques. Methods to Assure and Improve Quality deals broadly with techniques to monitor, assure, and improve quality. People and Quality focuses on human factors, changing roles, staffing, and training. Quality Assurance in Radiotherapy addresses the general issues of quality assurance with descriptions of the key systems

used to plan and treat patients and includes specific recommendations on the types and frequencies of certain tests. Quality Control: Equipment and Quality Control: Patient-Specific provides explicit details of quality control relating to equipment and patient-specific issues. Recently, a transformation of quality and safety in radiotherapy has begun to take place. Among the key drivers of this transformation have been new industrial and systems engineering approaches that have come to the forefront in recent years following revelations of system failures. This book provides an approach to quality that is long needed, one that deals with both human and technical aspects that must be the part of any overall quality improvement program.

World Congress on Medical Physics and Biomedical Engineering September 7 - 12, 2009 Munich, Germany

Present Your Research to the World! The World Congress 2009 on Medical Physics and Biomedical Engineering – the triennial scientific meeting of the IUPESM - is the world's leading forum for presenting the results of current scientific work in health-related physics and technologies to an international audience. With more than 2,800 presentations it will be the biggest conference in the fields of Medical Physics and Biomedical Engineering in 2009! Medical physics, biomedical engineering and bioengineering have been driving forces of innovation and progress in medicine and healthcare over the past two decades. As new key technologies arise with significant potential to open new options in diagnostics and therapeutics, it is a multidisciplinary task to evaluate their benefit for medicine and healthcare with respect to the quality of performance and therapeutic output. Covering key aspects such as information and communication technologies, micro- and nanosystems, optics and biotechnology, the congress will serve as an inter- and multidisciplinary platform that brings together people from basic research, R&D, industry and medical application to discuss these issues. As a major event for science, medicine and technology the congress provides a comprehensive overview and in–depth, first-hand information on new developments, advanced technologies and current and future applications. With this Final Program we would like to give you an overview of the dimension of the congress and invite you to join us in Munich! Olaf Dössel Congress President Wolfgang C.

Physical Aspects of Therapeutics

The updated edition of the third of three vollumes on Medical Physics presents modern physical methods for medical therapy with a focus on tumor treatment. It provides background information on radiation biology, radiation response of tissues, and linear energy transfer through radiation. Therapies with external radiation sources (x-rays, protons, neutrons) as well as internal radiation sources (brachytherapy) are discussed in detail. Other chapters deal with the use of lasers and nanoparticles in modern medicine. This volume closes with a short chapter on medical statistics. NEW: highlighted boxes emphasize specifi c topics; math boxes explain more advanced mathematical issues; each chapter concludes with a summary of the key concepts, questions, exercises, and a self-assessment of the acquired competence. The appendix provides answers to questions and solutions to exercises.

Artificial Intelligence in Radiation Oncology and Biomedical Physics

This pioneering book explores how machine learning and other AI techniques impact millions of cancer patients who benefit from ionizing radiation. It features contributions from global researchers and clinicians, focusing on the clinical applications of machine learning for medical physics. AI and machine learning have attracted much recent attention and are being increasingly adopted in medicine, with many clinical components and commercial software including aspects of machine learning integration. General principles and important techniques in machine learning are introduced, followed by discussion of clinical applications, particularly in radiomics, outcome prediction, registration and segmentation, treatment planning, quality assurance, image processing, and clinical decision-making. Finally, a futuristic look at the role of AI in radiation oncology is provided. This book brings medical physicists and radiation oncologists up to date with the most novel applications of machine learning to medical physics. Practitioners will appreciate the insightful discussions and detailed descriptions in each chapter. Its emphasis on clinical applications reaches a wide audience within the medical physics profession.

Particle Therapy Technology for Safe Treatment

The path from clinical requirements to technical implementation is filtered by the translation of the modality to the technology. An important part of that filter is that the modality be safe. For that to be the case, it is imperative to understand what clinical parameters affect the safety of a treatment and then

determine how the technology can affect those parameters. This book provides a practical introduction to particle therapy. It provides a thorough introduction to the technological tools and their applications and then details the components that are needed to implement them. It explains the foundations of beam production and beam delivery that serve to meet the necessary clinical requirements. It emphasizes the relationship between requirements and implementation, including how safety and quality are considered and implemented in the solution. The reader will learn to better understand what parameters are important to achieve these goals. Particle Therapy Technology for Safe Treatment will be a useful resource for professionals in the field of particle therapy in addition to biomedical engineers and practitioners in the field of beam physics. It can also be used as a textbook for graduate medical physics and beam physics courses. Key Features Presents a practical and accessible journey from application requirements to technical solutions Provides a pedagogic treatment of the underlying technology Describes how safety is to be considered in the application of this technology and how safety and quality can be factored into the overall system Author Bio After receiving his PhD in nuclear physics, Dr. Jacob Flanz was the Accelerator Physics Group leader and Principal Research Scientist at the Massachusetts Institute of Technology (MIT), USA, where he designed the recirculator and the GeV stretcher/storage ring. He joined Massachusetts General Hospital (MGH) and Harvard and became project and technical director of proton therapy, with responsibility for specifications, integration, and commissioning ensuring safe clinical performance. He invented the universal nozzle and led the design and implementation of beam scanning at MGH in 2008, including quality assurance. Dr. Flanz has been involved in several FDA applications for particle therapy. He developed and taught the US Particle Accelerator School course "Medical Applications of Accelerators and Beams." He was cochair of education and is currently the president of the Particle Therapy Co-Operative Group. Exercise solutions to accompany this book can be accessed via the 'Instructor Resources' tab on the book webpage.

Radiology, Lasers, Nanoparticles and Prosthetics

Order the Set Medical Physics and save almost 25€. Medical Physics covers the applied branch of physics concerned with the application of concepts and methods of physics to diagnostics and therapeutics of human diseases. This second volume in a series of two complements the imaging modalities presented in the first volume by those methods, which use ionizing radiation. The first chapters in part A on Radiography provide a solid background on radiation sources, interaction of radiation with matter, and dosimetry for the safe handling of radiation before introducing x-ray radiography, scintigraphy, SPECT and PET. The second part B on Radiotherapy starts from basic information on the life cycle of cells, radiation response of healthy and tumorous cells. In subsequent chapters the main methods of radiation treatment are presented, in particular x-ray radiotherapy, proton and neutron radiation therapy, and brachytherapy. The last part C, Diagnostics and Therapeutics beyond Radiology, covers laser applications, multifunctional nanoparticles and prosthetics. The present volume introduces the physical background on ionizing radiation, the biological effectiveness of radiation, as well as radiation based methods for diagnostics and therapeutics. covers the second part of the entire field of medical physics, including imaging methods with the use of ionizing radiation; radiation therapy with photons, protons, and neutrons; laser methods, nanomedicine and prosthetics. provides an introduction for Bachelor students to the main concepts of Medical Physics during their fi rst semesters guiding them to further specialized and advanced literature. contains many questions & answers related to the content of each chapter. is also available as a set together with Volume 1. Contents Part A: Radiography X-ray generation Nuclei and isotopes Interaction of radiation with matter Radiation detection and protection X-ray radiography Scintigraphy Positron emission tomography Part B: Radiotherapy Cell cycle and cancer X-ray radiotherapy Charged particle radiotherapy Neutron radiotherapy Brachytherapy Part C: Diagnostics and therapeutics beyond radiology Laser applications in medicine Nanoparticles for nanomedical applications Prosthetics

Hadron Therapy Physics and Simulations

This brief provides an in-depth overview of the physics of hadron therapy, ranging from the history to the latest contributions to the subject. It covers the mechanisms of protons and carbon ions at the molecular level (DNA breaks and proteins 53BP1 and RPA), the physics and mathematics of accelerators (Cyclotron and Synchrotron), microdosimetry measurements (with new results so far achieved), and Monte Carlo simulations in hadron therapy using FLUKA (CERN) and MCHIT (FIAS) software. The text also includes information about proton therapy centers and carbon ion centers (PTCOG), as well as a comparison and discussion of both techniques in treatment planning and

radiation monitoring. This brief is suitable for newcomers to medical physics as well as seasoned specialists in radiation oncology.

World Congress on Medical Physics and Biomedical Engineering 2018

This book (vol. 1) presents the proceedings of the IUPESM World Congress on Biomedical Engineering and Medical Physics, a triennially organized joint meeting of medical physicists, biomedical engineers and adjoining health care professionals. Besides the purely scientific and technological topics, the 2018 Congress will also focus on other aspects of professional involvement in health care, such as education and training, accreditation and certification, health technology assessment and patient safety. The IUPESM meeting is an important forum for medical physicists and biomedical engineers in medicine and healthcare learn and share knowledge, and discuss the latest research outcomes and technological advancements as well as new ideas in both medical physics and biomedical engineering field.

Walter and Miller's Textbook of Radiotherapy: Radiation Physics, Therapy and Oncology - E-Book

Walter and Miller’s Textbook of Radiotherapy is a key textbook for therapeutic radiography students as well as trainee clinical and medical oncologists, clinical physicists and technologists. The book is divided into 2 sections. The first section covers physics and provides a comprehensive review of radiotherapy physics. This section is designed to be non-physicist friendly, to simply and clearly explain the physical principles upon which radiotherapy and its technology are based. The second section is a systematic review by tumour site giving an up to date summary of radiotherapy practice. The title also covers the place of chemotherapy, surgery and non-radiotherapy treatments as well as the principles of cancer patient treatment including supportive care and palliative treatments. It is a comprehensive must-have resource for anyone studying therapeutic radiotherapy. Highly illustrated in full colour including 350 photographs. Clearly and simply explains the fundamental physics for clinicians Gives an up to date summary of radiotherapy practice organised by tumour site making it very easy to navigate. Describes the wide range of devices and clearly explains the principles behind their operation. Comprehensively explains the calculation models of dose predictions for treatment preparation. Heavy emphasis on how clinical trials have influenced current practice. Shows how radiobiological knowledge has influenced current practice such as the fractionation regimens for breast and prostate cancer Proton therapy; machines, dose measurement, covering the clinical advantages and pitfalls of this treatment modality. New radiotherapy modalities such as stereotactic radiotherapy, types of intensity modulated radiotherapy and imaged guided radiotherapy are comprehensively covered as are recent advances in chemotherapy and molecular targeted therapy. In depth coverage of dose measurement and new devices.

Laser-Driven Particle Acceleration Towards Radiobiology and Medicine

This book deals with the new method of laser-driven acceleration for application to radiation biophysics and medicine. It provides multidisciplinary contributions from world leading scientist in order to assess the state of the art of innovative tools for radiation biology research and medical applications of ionizing radiation. The book contains insightful contributions on highly topical aspects of spatio-temporal radiation biophysics, evolving over several orders of magnitude, typically from femtosecond and sub-micrometer scales. Particular attention is devoted to the emerging technology of laser-driven particle accelerators and their application to spatio-temporal radiation biology and medical physics, customization of non-conventional and selective radiotherapy and optimized radioprotection protocols.

Medical Physics and Biomedical Engineering

Medical Physics and Biomedical Engineering provides broad coverage appropriate for senior undergraduates and graduates in medical physics and biomedical engineering. Divided into two parts, the first part presents the underlying physics, electronics, anatomy, and physiology and the second part addresses practical applications. The structured approach means that later chapters build and broaden the material introduced in the opening chapters; for example, students can read chapters covering the introductory science of an area and then study the practical application of the topic. Coverage includes biomechanics; ionizing and nonionizing radiation and measurements; image formation techniques, processing, and analysis; safety issues; biomedical devices; mathematical and statistical techniques; physiological signals and responses; and respiratory and cardiovascular function and measurement. Where necessary, the authors provide references to the mathematical background and keep detailed

derivations to a minimum. They give comprehensive references to junior undergraduate texts in physics, electronics, and life sciences in the bibliographies at the end of each chapter.

World Congress of Medical Physics and Biomedical Engineering 2006

These proceedings of the World Congress 2006, the fourteenth conference in this series, offer a strong scientific program covering a wide range of issues and challenges which are currently present in Medical physics and Biomedical Engineering. About 2,500 peer reviewed contributions are presented in a six volume book, comprising 25 tracks, joint conferences and symposia, and including invited contributions from well known researchers in this field.

Applications of Modern Physics in Medicine

The connections between modern physics and medical technology Many remarkable medical technologies, diagnostic tools, and treatment methods have emerged as a result of modern physics discoveries in the last century—including X-rays, radiation treatment, laser surgery, high-resolution ultrasound scans, computerized tomography (CT) scans, and magnetic resonance imaging. This undergraduate-level textbook describes the fundamental physical principles underlying these technological advances, emphasizing their applications to the practice of modern medicine. Intended for science and engineering students with one year of introductory physics background, this textbook presents the medical applications of fundamental principles of physics to students who are considering careers in medical physics, biophysics, medicine, or nuclear engineering. It also serves as an excellent reference for advanced students, as well as medical and health researchers, practitioners, and technicians who are interested in developing the background required to understand the changing landscape of medical science. Practice exercises are included and solutions are available separately in an instructor's manual. Complete discussion of the fundamental physical principles underlying modern medicine Accessible exploration of the physics encountered in a typical visit to a doctor Practice exercises are included and solutions are provided in a separate instructor’s manual (available to professors) A companion website (modernphysicsinmedicine.com) presents supplementary materials

New Technologies in Radiation Oncology

- Summarizes the state of the art in the most relevant areas of medical physics and engineering applied to radiation oncology - Covers all relevant areas of the subject in detail, including 3D imaging and image processing, 3D treatment planning, modern treatment techniques, patient positioning, and aspects of verification and quality assurance - Conveys information in a readily understandable way that will appeal to professionals and students with a medical background as well as to newcomers to radiation oncology from the field of physics

Practical Radiobiology for Proton Therapy Planning

"Practical Radiobiology for Proton Therapy Planning covers the principles, advantages and potential pitfalls that occur in proton therapy, especially its radiobiological modelling applications. This book is intended to educate, inform and to stimulate further research questions. Additionally, it will help proton therapy centres when designing new treatments or when unintended errors or delays occur. The clear descriptions of useful equations for high LET particle beam applications, worked examples of many important clinical situations, and discussion of how proton therapy may be optimized are all important features of the text. This important book blends the relevant physics, biology and medical aspects of this multidisciplinary subject."--Prové de l'editor.

Webb's Physics of Medical Imaging

Since the publication of the best-selling, highly acclaimed first edition, the technology and clinical applications of medical imaging have changed significantly. Gathering these developments into one volume, Webb's Physics of Medical Imaging, Second Edition presents a thorough update of the basic physics, modern technology and many examples of cli

World Congress on Medical Physics and Biomedical Engineering, June 7-12, 2015, Toronto, Canada

This book presents the proceedings of the IUPESM World Biomedical Engineering and Medical Physics, a tri-annual high-level policy meeting dedicated exclusively to furthering the role of biomedical engineering and medical physics in medicine. The book offers papers about emerging issues related

to the development and sustainability of the role and impact of medical physicists and biomedical engineers in medicine and healthcare. It provides a unique and important forum to secure a coordinated, multileveled global response to the need, demand and importance of creating and supporting strong academic and clinical teams of biomedical engineers and medical physicists for the benefit of human health.

Gunderson & Tepper’s Clinical Radiation Oncology, E-Book

A comprehensive, multidisciplinary resource for the entire radiation oncology team, Gunderson & Tepper’s Clinical Radiation Oncology, 5th Edition, thoroughly covers all aspects of this complex and dynamic field. Concise, templated chapters cover the basic biology of oncologic disease processes as well as updated treatment algorithms, the latest clinical guidelines, and state-of-the-art techniques and modalities. More than 1,000 images—detailed anatomy drawings, radiographic images, and more—provide outstanding visual support for every area of the text. Divides content into three distinct sections for quick access to information: Scientific Foundations, Techniques and Modalities, and Disease Sites. Disease Site chapters include overviews summarizing the most important issues and concluding discussions on controversies and problems. Features new and expanded content on molecular and cellular biology and its relevance in individualized treatment approaches, stereotactic radiation therapy, radiosurgery, proton therapy, biologic therapy, precision radiation therapy, targeted radiation, dosing guidelines for better quality of life and improved patient outcomes, and more. Includes new chapters on Radiation Physics: Particle Therapy, Interventional Radiology, Radiation Therapy in the Elderly, Palliative Care, Quality and Safety, and Immunotherapy with Radiotherapy. Provides guidance on single-modality and combined-modality approaches, as well as outcome data including disease control, survival, and treatment tolerance. Includes access to videos on Intraoperative Irradiation, Prostate Brachytherapy, Penile Brachytherapy, and Ocular Melanoma.