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This book explores in detail the role of laboratory work in physics teaching and learning. Compelling recent research work is presented on the value of experimentation in the learning process, with description of important research-based proposals on how to achieve improvements in both teaching and learning. The book comprises a rigorously chosen selection of papers from a conference organized by the International Research Group on Physics Teaching (GIREP), an organization that promotes enhancement of the quality of physics teaching and learning at all educational levels and in all contexts. The topics covered are wide ranging. Examples include the roles of open inquiry experiments and advanced lab experiments, the value of computer modeling in physics teaching, the use of web-based interactive video activities and smartphones in the lab, the effectiveness of low-cost experiments, and assessment for learning through experimentation. The presented research-based proposals will be of interest to all who seek to improve physics teaching and learning.

The latest edition of this classic is updated with new problem sets and material. The Second Edition of this fundamental textbook maintains the book's tradition of clear, thought-provoking instruction. Readers are provided once again with an instructive mix of mathematics, physics, statistics, and information theory. All the essential topics in information theory are covered in detail, including entropy, data compression, channel capacity, rate distortion, network information theory, and hypothesis testing. The authors provide readers with a solid understanding of the underlying theory and applications. Problem sets and a telegraphic summary at the end of each chapter further assist readers. The historical notes that follow each chapter recap the main points. The Second Edition features: * Chapters reorganized to improve teaching * 200 new problems * New material on source coding, portfolio theory, and feedback capacity * Updated references. Now current and enhanced, the Second Edition of *Elements of Information Theory* remains the ideal textbook for upper-level undergraduate and graduate courses in electrical engineering, statistics, and telecommunications.

Distributed ledgers, decentralization and smart contracts explained. About This Book Get to grips with the underlying technical principles and implementations of blockchain. Build powerful applications using Ethereum to secure transactions and create smart contracts. Explore cryptography, mine cryptocurrencies, and solve scalability issues with this comprehensive guide. Who This Book Is For This book appeals to those who wish to build fast, highly secure, transactional applications. This book is for those who are familiar with the concept of blockchain and are comfortable with a programming language. What You Will Learn Master the theoretical and technical foundations of

blockchain technology Fully comprehend the concept of decentralization, its impact and relationship with blockchain technology Experience how cryptography is used to secure data with practical examples Grasp the inner workings of blockchain and relevant mechanisms behind Bitcoin and alternative cryptocurrencies Understand theoretical foundations of smart contracts Identify and examine applications of blockchain technology outside of currencies Investigate alternate blockchain solutions including Hyperledger, Corda, and many more Explore research topics and future scope of blockchain technology In Detail Blockchain is a distributed database that enables permanent, transparent, and secure storage of data. The blockchain technology is the backbone of cryptocurrency – in fact, it's the shared public ledger upon which the entire Bitcoin network relies – and it's gaining popularity with people who work in finance, government, and the arts. Blockchain technology uses cryptography to keep data secure. This book gives a detailed description of this leading technology and its implementation in the real world. This book begins with the technical foundations of blockchain, teaching you the fundamentals of cryptography and how it keeps data secure. You will learn about the mechanisms behind cryptocurrencies and how to develop applications using Ethereum, a decentralized virtual machine. You will explore different blockchain solutions and get an exclusive preview into Hyperledger, an upcoming blockchain solution from IBM and the Linux Foundation. You will also be shown how to implement blockchain beyond currencies, scalability with blockchain, and the future scope of this fascinating and powerful technology. Style and approach This comprehensive guide allows you to build smart blockchain applications and explore the power of this database. The book will let you quickly brush up on the basics of the blockchain database, followed by advanced implementations of blockchain in currency, smart contracts, decentralization, and so on. Illustrates the new features of Windows 10.

'A Khushwant Singh short story is not flamboyant but modest, restrained, well-crafted...Perhaps his greatest gift as a writer is a wonderful particularity of description'—London Magazine Khushwant Singh first established his reputation as a writer through the short story. His stories—wry, poignant, erotic and, above all, human—bear testimony to Khushwant Singh's remarkable range and his ability to create an unforgettable PBI - World. Spanning over half a century, this volume contains all the short stories Khushwant Singh has ever written, including the delightfully tongue-in-cheek 'The Maharani of Chootiapuram', written in 2008. 'Khushwant's stories enthrall...[He has]an ability akin to that of Somerset Maugham...the ability to entertain intelligently'—PBI - India Today 'His stories are better than [those of] any PBI - Indian writing in English—Times of PBI - India 'The Collected Short Stories leaves the reader in a delightful, inebriated trance'—Sunday Chronicle 'He is not an ordinary

short story writer...[Collected Stories] is delightful reading'—Hindustan Times

One of the main difficulties of applying an evolutionary algorithm (or, as a matter of fact, any heuristic method) to a given problem is to decide on an appropriate set of parameter values. Typically these are specified before the algorithm is run and include population size, selection rate, operator probabilities, not to mention the representation and the operators themselves. This book gives the reader a solid perspective on the different approaches that have been proposed to automate control of these parameters as well as understanding their interactions. The book covers a broad area of evolutionary computation, including genetic algorithms, evolution strategies, genetic programming, estimation of distribution algorithms, and also discusses the issues of specific parameters used in parallel implementations, multi-objective evolutionary algorithms, and practical consideration for real-world applications. It is a recommended read for researchers and practitioners of evolutionary computation and heuristic methods.

This unique book offers a comprehensive and integrated introduction to the five fundamental elements of life and society: energy, information, feedback, adaptation, and self-organization. It is divided into two parts. Part I is concerned with energy (definition, history, energy types, energy sources, environmental impact); thermodynamics (laws, entropy definitions, energy, branches of thermodynamics, entropy interpretations, arrow of time); information (communication and transmission, modulation-demodulation, coding-decoding, information theory, information technology, information science, information systems); feedback control (history, classical methodologies, modern methodologies); adaptation (definition, mechanisms, measurement, complex adaptive systems, complexity, emergence); and self-organization (definitions/opinions, self-organized criticality, cybernetics, self-organization in complex adaptive systems, examples in nature). In turn, Part II studies the roles, impacts, and applications of the five above-mentioned elements in life and society, namely energy (biochemical energy pathways, energy flows through food chains, evolution of energy resources, energy and economy); information (information in biology, biocomputation, information technology in office automation, power generation/distribution, manufacturing, business, transportation), feedback (temperature, water, sugar and hydrogen ion regulation, autocatalysis, biological modeling, control of hard/technological and soft/managerial systems), adaptation and self-organization (ecosystems, climate change, stock market, knowledge management, man-made self-organized controllers, traffic lights control).

A fireman in charge of burning books meets a revolutionary school teacher who dares to read. Depicts a future world in which all printed reading material is burned.

This book constitutes the proceedings of the 4th International Workshop on Emerging Technologies for Authorization and Authentication, ETAA 2021, held in Darmstadt, Germany, on October 8, 2021. The workshop was co-located with ESORICS 2021. The 11 full papers presented in this volume were carefully reviewed and selected from 14 submissions. The workshop presents new techniques for biometric and behavioral based authentication, authentication and authorization in the IoT and in distributed systems in general, including smart home environment.

RealTime Physics is a series of introductory laboratory modules that use computer data acquisition tools (microcomputer-based lab or MBL tools) to help students develop important physics concepts while acquiring vital laboratory skills. Besides data acquisition, computers are used for basic mathe-

matical modeling, data analysis, and more simulations.

The purpose of this publication is to introduce a new, simpler and more effective way in which to interpret pharmaceutical aerosol particle size data from orally inhaled products (OIPs). Currently, the compendial and regulatory requirements dictate the need for measurements by full resolution multi-stage cascade impactor (CI), a process that is demanding for the operator, time consuming, prone to experimental error, and challenging for method transfers from one laboratory to another. Furthermore, we shall show that the current practice of reducing information from mass-weighted aerodynamic particle size distribution (APSD) measurements through the use of CI stage groupings is not the most effective decision-making tool for OIP quality control (QC) in comparison with newly introduced, mutually-independent efficient data analysis (EDA) metrics that can be derived either from full resolution or abbreviated impactor measurements (AIM).

This timely and important collection broadens our understanding of the ways in which lay theories (also known as folk psychologies, implicit theories, naïve theories, or mindsets) impact our lives and social relations. Moving well beyond lay theories as applied to intelligence and achievement, this volume considers lay theories in an admirably wide context, including perspectives on prejudice, creativity, self-regulation, health, free will, justice, magic, religion and more. Eminent and emerging scholars alike provide a comprehensive overview that presents and synthesizes cutting edge contemporary research on lay theories, spanning social, cognitive, developmental, cultural, and clinical psychology. Structurally, this volume is organized in three parts. Beginning with a preface by renowned scholar Carol Dweck, the first part looks at the origins and nature of lay theories, and how malleable they are. The second part explores lay theories about common psychological phenomena. The third section discusses lay theories about the metaphysical or supernatural. Finally, the last section explores the important question of how lay theories impact health and health behavior. Taken together, the chapters provide an integrative survey of the science of lay theories, bringing together many perspectives that previously have been studied largely in isolation. This volume is more than the sum of its parts—perspectives from different strands of research provide insights that cut across research disciplines, making novel connections and prompting new directions for this field of study. Shedding light on how our beliefs shape all facets of our lives, *The Science of Lay Theories: How Beliefs Shape Our Cognition, Behavior, and Health* will appeal to researchers and practitioners in psychology, as well as philosophers, cognitive and developmental neuroscientists, religious scholars, sociologists, and anthropologists. It is very rare to say of an edited volume of scholarly chapters "I couldn't put it down!" Yet that was the case with this book. It's not just that I have worked in this field for many years, but rather, with every chapter I felt I was gaining new insights into what, deep down, people really believe and how these beliefs influence their lives—Carol Dweck, Stanford University, Palo Alto, CA, USA

"The promise of cloud computing is here. These pages provide the 'eyes wide open' insights you need to transform your business." --Christopher Crowhurst, Vice President, Strategic Technology, Thomson Reuters A Down-to-Earth Guide to Cloud Computing Cloud Computing: A Practical Approach provides a comprehensive look at the emerging paradigm of Internet-based enterprise applications and services. This accessible book offers a broad introduction to cloud computing, reviews a wide variety of currently available solutions, and discusses the cost savings and organizational and

operational benefits. You'll find details on essential topics, such as hardware, platforms, standards, migration, security, and storage. You'll also learn what other organizations are doing and where they're headed with cloud computing. If your company is considering the move from a traditional network infrastructure to a cutting-edge cloud solution, you need this strategic guide. Cloud Computing: A Practical Approach covers: Costs, benefits, security issues, regulatory concerns, and limitations Service providers, including Google, Microsoft, Amazon, Yahoo, IBM, EMC/VMware, Salesforce.com, and others Hardware, infrastructure, clients, platforms, applications, services, and storage Standards, including HTTP, HTML, DHTML, XMPP, SSL, and OpenID Web services, such as REST, SOAP, and JSON Platform as a Service (PaaS), Software as a Service (SaaS), and Software plus Services (S+S) Custom application development environments, frameworks, strategies, and solutions Local clouds, thin clients, and virtualization Migration, best practices, and emerging standards

This second edition of the book entitled "Microbial Communities and Interactions in extreme environments" focus on thermophilic and halophilic extremophiles from various ecosystems, their biodiversity, interactions with other organisms and functions within their hostile environment. Biotechnology of extremophiles and their potential agricultural and industrial applications is the focus of this edition. However, extremophiles may cope with their challenging environments. Information on biodiversity of extremophiles and their interactions with the surrounding biomes helps in understanding their ecology and functions within their respective extreme environments. This book is of interest to teachers, researchers, microbiologists, capacity builders and policymakers. Also, the book serves as additional reading material for undergraduate and graduate students of agriculture, forestry, ecology, soil science, microbiology and environmental sciences.

Handbook of Food Fortification and Health: From Concepts to Public Health Applications Volume 1 represents a multidisciplinary approach to food fortification. This book aims to disseminate important material pertaining to the fortification of foods from strategic initiatives to public health applications. Optimal nutritional intake is an essential component of health and wellbeing. Unfortunately situations arise on a local or national scale when nutrient supply or intake is deemed to be suboptimal. As a consequence, ill health occurs affecting individual organs or causing premature death. In terms of public health, malnutrition due to micronutrient deficiency can be quite profound imposing economic and social burdens on individuals and whole communities. This comprehensive text examines the broad spectrum of food fortification in all its manifestations. Coverage includes sections on definitions of fortifications, fortified foods, beverages and nutrients, fortifications with micronutrients, bio-fortification, impact on individuals, public health concepts and issues, and selective methods and food chemistry. Handbook of Food Fortification and Health: From Concepts to Public Health Applications Volume 1 is an indispensable text designed for nutritionists, dietitians, clinicians and health related professionals.

How augmented reality and virtual reality are taking their places in contemporary media culture alongside film and television. This book positions augmented reality (AR) and virtual reality (VR) firmly in contemporary media culture. The authors view AR and VR not as the latest hyped technologies but as media—the latest in a series of what they term "reality media," taking their places alongside film and television. Reality media inserts a layer of media between us and our perception of the world; AR and VR do not replace reality but refashion a reality for us. Each reality medium mediates

and remediates; each offers a new representation that we implicitly compare to our experience of the world in itself but also through other media. The authors show that as forms of reality media emerge, they not only chart a future path for media culture, but also redefine media past. With AR and VR in mind, then, we can recognize their precursors in eighteenth-century panoramas and the Broadway lights of the 1930s. A digital version of Reality Media, available through the book's website, invites readers to visit a series of virtual rooms featuring interactivity, 3-D models, videos, images, and texts that explore the themes of the book.

A Networked Self examines self presentation and social connection in the digital age. This collection brings together new work on online social networks by leading scholars from a variety of disciplines. The focus of the volume rests on the construction of the self, and what happens to self-identity when it is presented through networks of social connections in new media environments. The volume is structured around the core themes of identity, community, and culture – the central themes of social network sites. Contributors address theory, research, and practical implications of many aspects of online social networks including self-presentation, behavioral norms, patterns and routines, social impact, privacy, class/gender/race divides, taste cultures online, uses of social networking sites within organizations, activism, civic engagement and political impact.

From the late fifteenth to the nineteenth centuries, the Hispanic Monarchy was one of the largest and most diverse political communities known in history. At its apogee, it stretched from the Castilian plateau to the high peaks of the Andes; from the cosmopolitan cities of Seville, Naples, or Mexico City to Santa Fe and San Francisco; from Brussels to Buenos Aires and from Milan to Manila. During those centuries, Spain left its imprint across vast continents and distant oceans contributing in no minor way to the emergence of our globalised era. This was true not only in an economic sense—the Hispano-American silver peso transported across the Atlantic and the Pacific by the Spanish fleets was arguably the first global currency, thus facilitating the creation of a world economic system—but intellectually and artistically as well. The most extraordinary cultural exchanges took place in practically every corner of the Hispanic world, no matter how distant from the metropolis. At various times a descendant of the Aztec nobility was translating a Baroque play into Nahuatl to the delight of an Amerindian and mixed audience in the market of Tlatelolco; an Andalusian Dominican priest was writing the first Western grammar of the Chinese language in Fuzhou, a Chinese city that enjoyed a trade monopoly with the Spanish Philippines; a Franciscan friar was composing a piece of polyphonic music with lyrics in Quechua to be played in a church decorated with Moorish-style ceilings in a Peruvian valley; or a multi-ethnic team of Amerindian and Spanish naturalists was describing in Latin, Spanish and local vernacular languages thousands of medicinal plants, animals and minerals previously unknown to the West. And, most probably, at the same time that one of those exchanges were happening, the members of the School of Salamanca were laying the foundations of modern international law or formulating some of the first modern theories of price, value and money, Cervantes was writing *Don Quixote*, Velázquez was painting *Las Meninas*, or Goya was exposing both the dark and bright sides of the European Enlightenment. Actually, whenever we contemplate the galleries devoted to Velázquez, El Greco, Zurbarán, Murillo or Goya in the Prado Museum in Madrid; when we visit the National Palace in Mexico City, a mission in California, a Jesuit church in Rome or the Intramuros quarter in Manila; or when we hear Spanish being spoken in a myriad of ac-

cents in the streets of San Francisco, New Orleans or Manhattan we are experiencing some of the past and present fruits of an always vibrant and still expanding cultural community. As the reader can infer by now, this book is about how Spain and the larger Hispanic world have contributed to world history and in particular to the history of civilisation, not only at the zenith of the Hispanic Monarchy but throughout a much longer span of time.

This book is a collection of multidisciplinary papers presented at the Department of Physics of Milan University's congress on 28 and 29 June 2017, which was also intended as a kick-off meeting for the design of a novel science campus at the Expo site in Milan. The congress presented a snapshot of the department's research to the academic community, the media, policymakers and authorities as well as the public at large, and also provided an opportunity to strengthen interdisciplinary collaborations between the members of the department and other communities. This book is a valuable resource for scientists looking for synergetic projects, policymakers wanting to grasp scientists' points of view and for prospective graduate students seeking expanding areas of research.

This book gathers high-quality peer-reviewed research papers presented at the International Conference on Intelligent Computing and Networking (IC-ICN 2021), organized by the Computer Department, Thakur College of Engineering and Technology, in Mumbai, Maharashtra, India, on February 26–27, 2021. The book includes innovative and novel papers in the areas of intelligent computing, artificial intelligence, machine learning, deep learning, fuzzy logic, natural language processing, human-machine interaction, big data mining, data science and mining, applications of intelligent systems in health, care, finance, agriculture and manufacturing, high-performance computing, computer networking, sensor and wireless networks, Internet of Things (IoT), software-defined networks, cryptography, mobile computing, digital forensics, and blockchain technology.

This detailed book collects modern and established computer-based methods aimed at addressing the drug discovery challenge from disparate perspectives by exploiting information on ligand-protein recognition. Beginning with methods that allow for the exploration of specific areas of chemical space and the designing of virtual libraries, the volume continues with sections on methods based on docking, quantitative models, and molecular dynamics simulations, which are employed for ligand discovery or development, as well as methods exploiting an ensemble of protein structures for the identification of potential protein targets. Written for the highly successful *Methods in Molecular Biology* series, chapters include introductions to their respective topics, lists of the necessary materials, step-by-step, readily reproducible laboratory protocols, and tips on troubleshooting and avoiding known pitfalls. Authoritative and cutting-edge, *Protein-Ligand Interactions and Drug Design* provides detailed practical procedures of solid computer-aided drug design methodologies employed to rationalize and optimize protein-ligand interactions, for experienced researchers and novices alike.

Practical Urological Ultrasound has become a primary reference for urologists and sonographers performing urologic ultrasound examinations. This third edition is comprised of twenty-two chapters including newly added chapters on technical advancements in ultrasound, male reproduction ultrasound, point-of-care ultrasound, quality assessment and implementation for urologic practices, and sonographers in the urologic practice. All chapters are fully updated and expanded, covering additional literature on further elucidation of Doppler ultrasound principles, sonoelastography, quantitative evaluation of the clinical causes of ED, evaluations of the pelvic mesh implant and its complications,

developments in multiparametric ultrasound of the prostate, and updated protocols in POCUS. Written by experts in the field of urology, *Practical Urological Ultrasound, Third Edition* continues to serve as an important resource for the novice and a comprehensive reference for the advanced sonographer.

Mycotoxins are poisonous chemical compounds produced by certain fungi. There are many such compounds, but only a few of them are regularly found in food and animal feedstuffs. Nevertheless, those that do occur in food and feed have great significance in the health of humans and livestock. The effects of some mycotoxins are acute, with symptoms of severe illness appearing very quickly. Other mycotoxins have longer term chronic or cumulative effects on health, including the induction of cancers and immune deficiency. Information about mycotoxins is far from complete, but enough is known to identify them as a serious problem in many parts of the world, causing significant economic losses in addition to their negative health effects. 'The mycotoxin factbook' is aimed at the latest developments to combat the mycotoxin problem. The book contains the peer-reviewed papers of the third conference of the World Mycotoxin Forum. The various chapters focus on mycotoxin food and feed risks in the context of human nutrition and animal feeding. Topics dealt with in 'The mycotoxin factbook' are: - Regulatory issues, international developments and the impact on world trade - The latest information on major mycotoxins and emerging problems in the food chain - The impact of mycotoxins in the feed chain - New developments in mycotoxin prevention - Trends in mycotoxin analysis 'The mycotoxin factbook' is a valuable resource for researchers and professionals from the food and feed industry as well as from the scientific community. This book is an ideal supplement to 'Meeting the mycotoxin menace' as published in 2004.

Get your "A" in gear! They're today's most popular study guides-with everything you need to succeed in school. Written by Harvard students for students, since its inception SparkNotes™ has developed a loyal community of dedicated users and become a major education brand. Consumer demand has been so strong that the guides have expanded to over 150 titles. SparkNotes'™ motto is Smarter, Better, Faster because: · They feature the most current ideas and themes, written by experts. · They're easier to understand, because the same people who use them have also written them. · The clear writing style and edited content enables students to read through the material quickly, saving valuable time. And with everything covered--context; plot overview; character lists; themes, motifs, and symbols; summary and analysis, key facts; study questions and essay topics; and reviews and resources--you don't have to go anywhere else!

Much has been written about special education and about inclusive education, but there have been few attempts to pull these two concepts and approaches together. This book does just that: sets special education within the context of inclusive education. It posits that to include, effectively, all children with special educational needs in schools requires an integration of both concepts, approaches, and techniques. It has never been more timely to publish a book that helps professionals who work with schools, such as psychologists, special education professionals, and counselors, to identify effective practices for children with special needs and provide guidelines for implementing these in inclusive schools.

Protein kinases are fascinating enzymes that maintain the proper function of nearly every task performed by the cells of the human body. By extracting a phosphate from the energy molecule ATP

and linking it to another protein, protein kinases alter the structure and ultimate function of other proteins. In this way, protein kinases help monitor the extracellular environment and integrate signaling cues that, for the most part, are beneficial for human health and survival. However, protein kinases are often dysregulated and responsible for the initiation and progression of many types of cancers, inflammatory disorders, and other diseases. Thus, decades of research have revealed much about how protein kinases are regulated and approaches to inhibit these enzymes to treat disease. However, nearly 30 years since the identification of the first clinically beneficial small molecule protein kinase inhibitor, there are only a few examples where these drugs provide sustained and durable patient responses. The goal of this book is to provide biomedical scientists, graduate, and professional degree students insight into different approaches using small molecules to block specific protein kinase functions that promote disease.

Study more effectively and improve your performance at exam time with this comprehensive guide. Written to work hand-in hand with DISCOVERING COMPUTERS 2011: COMPLETE, 1st Edition, this user-friendly guide includes a wide variety of learning tools to help you master the key concepts of the course.

This collection of short expository, critical and speculative texts offers a field guide to the cultural, political, social and aesthetic impact of software. Experts from a range of disciplines each take a key topic in software and the understanding of software, such as algorithms and logical structures.

This book covers novel and innovative technologies used in development, modeling, chemical/physical investigation and biomedical (in-vitro and in-vivo) trials of nanomaterials and nanocomposites. Novel methods for nanoparticle development and manufacturing are presented, as well as their safety and promising applications. In addition, the book highlights new frontiers in the use of metal / metal oxide nanoparticles, hierarchical nanostructures and organic coatings as sensors for detecting gases, inorganic and organic materials, including biosensors for bacteria and cancers. Organic nanoparticle composites for medical applications (tissue engineering, tissue replacement, regeneration, etc.), including hydroxyapatite NPs, are also covered, together with related in-vitro and preclinical investigations. In closing, the book shares recent findings on orthopedic and dental implant coatings using nanoparticles, their biological efficacy and safety.

This book explores evidence-based practice in college science teaching. It is grounded in disciplinary education research by practicing scientists who have chosen to take Wieman's (2014) challenge seriously, and to investigate claims about the efficacy of alternative strategies in college science teaching. In editing this book, we have chosen to showcase outstanding cases of exemplary practice supported by solid evidence, and to include practitioners who offer models of teaching and learning that meet the high standards of the scientific disciplines. Our intention is to let these distinguished scientists speak for themselves and to offer authentic guidance to those who seek models of excellence. Our primary audience consists of the thousands of dedicated faculty and graduate students who teach undergraduate science at community and technical colleges, 4-year liberal arts institutions, comprehensive regional campuses, and flagship research universities. In keeping with Wieman's challenge, our primary focus has been on identifying classroom practices that encourage and support meaningful learning and conceptual understanding in the natural sciences. The content is structured as follows: after an Introduction based on Constructivist Learning Theory (Section I), the prac-

tices we explore are Eliciting Ideas and Encouraging Reflection (Section II); Using Clickers to Engage Students (Section III); Supporting Peer Interaction through Small Group Activities (Section IV); Restructuring Curriculum and Instruction (Section V); Rethinking the Physical Environment (Section VI); Enhancing Understanding with Technology (Section VII), and Assessing Understanding (Section VIII). The book's final section (IX) is devoted to Professional Issues facing college and university faculty who choose to adopt active learning in their courses. The common feature underlying all of the strategies described in this book is their emphasis on actively engaging students who seek to make sense of natural objects and events. Many of the strategies we highlight emerge from a constructivist view of learning that has gained widespread acceptance in recent years. In this view, learners make sense of the world by forging connections between new ideas and those that are part of their existing knowledge base. For most students, that knowledge base is riddled with a host of naïve notions, misconceptions and alternative conceptions they have acquired throughout their lives. To a considerable extent, the job of the teacher is to coax out these ideas; to help students understand how their ideas differ from the scientifically accepted view; to assist as students restructure and reconcile their newly acquired knowledge; and to provide opportunities for students to evaluate what they have learned and apply it in novel circumstances. Clearly, this prescription demands far more than most college and university scientists have been prepared for.

KEY BENEFIT: The Open Source Physics project provides a comprehensive collection of Java applications, smaller ready-to-run simulations, and computer-based interactive curricular material. This book provides all the background required to make best use of this material and is designed for scientists and students wishing to learn object-oriented programming using Java in order to write their own simulations and develop their own curricular material. The book provides a convenient overview of the Open Source Physics library and gives many examples of how the material can be used in a wide range of teaching and learning scenarios. Both source code and compiled ready-to-run examples are conveniently included on the accompanying CD-ROM. The book also explains how to use the Open Source Physics library to develop and distribute new curricular material. Introduction to Open Source Physics, A Tour of Open Source Physics, Frames Package, Drawing, Controls and Threads, Plotting, Animation, Images, and Buffering, Two-Dimensional Scalar and Vector Fields, Differential Equations and Dynamics, Numerics, XML Documents, Visualization in Three Dimensions, Video, Utilities, Launching Physics Curricular Material, Tracker Video Analysis, Easy Java Simulations Modeling, The BQ Database For all readers interested in learning object-oriented programming using Java in order to write their own simulations and develop their own curricular material.

"This academic and personal journey into Albania's post-communist society examines the links between internal and international migration in one of Europe's poorest countries. The author follows rural migrants to urban destination both within Albania and in neighboring Greece. Their lives and experiences are captured in 150 interviews, alongside group discussions and the ethnographic observations. This rich empirical material is analysed with reference to an extensive body of literature. The author's own experience as migrant and reflections as a researcher studying her own communities of origin add valuable insights. The result is a demonstration of the complexity of the links between internal and international migration, especially from a development perspective."--back cover.

Digital technology has made culture more accessible than ever before. Texts, audio, pictures and

video can easily be produced, disseminated, used and remixed using devices that are increasingly user-friendly and affordable. However, along with this technological democratization comes a paradoxical flipside: the norms regulating culture's use - copyright and related rights - have become increasingly restrictive. This book brings together essays by academics, librarians, entrepreneurs, activists and policy makers, who were all part of the EU-funded Communia project. Together the authors argue that the Public Domain - that is, the informational works owned by all of us, be that literature, music, the output of scientific research, educational material or public sector information - is fundamental to a healthy society. The essays range from more theoretical papers on the history of copyright and the Public Domain, to practical examples and case studies of recent projects that have engaged with the principles of Open Access and Creative Commons licensing. The book is essential reading for anyone interested in the current debate about copyright and the Internet. It opens up discussion and offers practical solutions to the difficult question of the regulation of culture at the digital age.

Higher education is coming under increasing scrutiny, both publically and within academia, with respect to its ability to appropriately prepare students for the careers that will make them competitive in the 21st-century workplace. At the same time, there is a growing awareness that many global issues will require creative and critical thinking deeply rooted in the technical STEM (science, technology, engineering, and mathematics) disciplines. However, the existing and ingrained structures of higher education, particularly in the STEM fields, are not set up to provide students with extensive skill development in communication, teamwork, and divergent thinking, which is needed for success in the knowledge economy. In 2011 and again in 2014, an international conference was convened to bring together university leaders, educational policymakers and researchers, and funding agency representatives to discuss the issue of institutional transformation in higher education, particularly in the STEM disciplines. Central to the issue of institutional transformation is the ability to provide new forms of instruction so that students can gain the variety of skills and depth of knowledge they will need. However, radically altering approaches to instruction sets in motion a domino effect that touches on learning space design, instructional technology, faculty training and reward structures, course scheduling, and funding models. In order for one piece to move, there must be coordinated movement in the others, all of which are part of an entrenched and interconnected system. Trans-

forming Institutions brings together chapters from the scholars and leaders who were part of the 2011 and 2014 conferences. It provides an overview of the context and challenges in STEM higher education, contributed chapters describing programs and research in this area, and a reflection and summary of the lessons from the many authors' viewpoints, leading to suggested next steps in the path toward transformation.

This in-depth book addresses a key void in the literature surrounding the Internet of Things (IoT) and health. By systematically evaluating the benefits of mobile, wireless, and sensor-based IoT technologies when used in health and wellness contexts, the book sheds light on the next frontier for health-care delivery. These technologies generate data with significant potential to enable superior care delivery, self-empowerment, and wellness management. Collecting valuable insights and recommendations in one accessible volume, chapter authors identify key areas in health and wellness where IoT can be used, highlighting the benefits, barriers, and facilitators of these technologies as well as suggesting areas for improvement in current policy and regulations. Four overarching themes provide a suitable setting to examine the critical insights presented in the 31 chapters: Mobile- and sensor-based solutions Opportunities to incorporate critical aspects of analytics to provide superior insights and thus support better decision-making Critical issues around aspects of IoT in healthcare contexts Applications of portals in healthcare contexts A comprehensive overview that introduces the critical issues regarding the role of IoT technologies for health, Delivering Superior Health and Wellness Management with IoT and Analytics paves the way for scholars, practitioners, students, and other stakeholders to understand how to substantially improve health and wellness management on a global scale.

This Handbook intends to inform Data Providers and researchers on how to provide privacy-protected access to, handle, and analyze administrative data, and to link them with existing resources, such as a database of data use agreements (DUA) and templates. Available publicly, the Handbook will provide guidance on data access requirements and procedures, data privacy, data security, property rights, regulations for public data use, data architecture, data use and storage, cost structure and recovery, ethics and privacy-protection, making data accessible for research, and dissemination for restricted access use. The knowledge base will serve as a resource for all researchers looking to work with administrative data and for Data Providers looking to make such data available.