

Physical Sciences Exemplar 2014

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2015-2016 Assessment of the Army Research Laboratory - National Academies of Sciences, Engineering, and Medicine 2017-05-01

The National Academies of Sciences, Engineering, and Medicine's Army Research Laboratory Technical Assessment Board (ARLTAB) provides biennial assessments of the scientific and technical quality of the research, development, and analysis programs at the Army Research Laboratory (ARL), focusing on ballistics sciences, human sciences, information sciences, materials sciences, and mechanical sciences. This biennial report summarizes the findings of the ARLTAB from the reviews conducted by the panels in 2015 and 2016 and subsumes the 2015-2016 interim report.

Dimensions of Impact in the Social Sciences - Haux, Tina 2019-07-03

Impact has become a central part of the assessment criteria for academic worth. It has been adopted by many research funding bodies, and it is firmly embedded in the British Research Excellence Framework.

However, a clear definition of impact remains elusive and guidance on how exactly to achieve it is often superficial. This concise, informative book analyses impact across the social sciences. It draws on the analysis of the most highly ranked British impact case studies from the 2014 Research Excellence Framework, as well as fifteen interviews with senior academics, providing a longitudinal and critical framing of impact. The author concludes with valuable recommendations of how and when scholars can achieve impact.

Science Education, Career Aspirations and Minority Ethnic Students - Billy Wong 2016-04-08

Is science typically for White men? Is science for 'people like us'? What are the barriers and opportunities? This book explores the science career aspirations of minority ethnic students. It investigates the views, experiences and identities of British Black Caribbean, Bangladeshi, Chinese, Indian and Pakistani youths in relation to science.

A Midterm Assessment of Implementation of the Decadal Survey on Life and Physical Sciences Research at NASA - National Academies of Sciences, Engineering, and Medicine 2018-06-09

The 2011 National Research Council decadal survey on biological and physical sciences in space, *Recapturing a Future for Space Exploration: Life and Physical Sciences Research for a New Era*, was written during a critical period in the evolution of science in support of space exploration. The research agenda in space life and physical sciences had been significantly descope during the programmatic adjustments of the Vision for Space Exploration in 2005, and this occurred in the same era as the International Space Station (ISS) assembly was nearing completion in 2011. Out of that period of change, *Recapturing a Future for Space Exploration* presented a cogent argument for the critical need for space life and physical sciences, both for enabling and expanding the exploration capabilities of NASA as well as for contributing unique science in many fields that can be enabled by access to the spaceflight environment. Since the 2011 publication of the decadal survey, NASA has seen tremendous change, including the retirement of the Space Shuttle Program and the maturation of the ISS. NASA formation of the Division of Space Life and Physical Sciences Research and Applications provided renewed focus on the research of the decadal survey. NASA has modestly regrown some of the budget of space life and physical sciences within the agency and engaged the U.S. science community outside NASA to join in this research. In addition, NASA has collaborated with the international space science community. This midterm assessment reviews NASA's progress since the 2011 decadal survey in order to evaluate the high-priority research identified in the decadal survey in light of future human Mars exploration. It makes recommendations on science priorities, specifically those priorities that best enable deep space exploration.

Bayesian Methods for the Physical Sciences - Stefano Andreon 2015-05-19

Statistical literacy is critical for the modern researcher in Physics and Astronomy. This book empowers researchers in these disciplines by providing the tools they will need to analyze their own data. Chapters in this book provide a statistical base from which to approach new problems, including numerical advice and a profusion of examples. The examples are engaging analyses of real-world problems taken from modern astronomical research. The examples are intended to be starting points for readers as they learn to approach their own data and research questions. Acknowledging that scientific progress now hinges on the availability of data and the possibility to improve previous analyses, data and code are distributed throughout the book. The JAGS symbolic language used throughout the book makes it easy to perform Bayesian analysis and is particularly valuable as readers may use it in a myriad of scenarios through slight modifications. This book is comprehensive, well written, and will surely be regarded as a standard text in both astrostatistics and physical statistics. Joseph M. Hilbe, President, International Astrostatistics Association, Professor Emeritus, University of Hawaii, and Adjunct Professor of Statistics, Arizona State University [Review of the Draft 2014 Science Mission Directorate Science Plan](#) - Committee on the Assessment of the NASA Science Mission Directorate 2014 Science Plan 2013-12-16

NASA's Science Mission Directorate (SMD) is engaged in the final stages of a comprehensive, agency-wide effort to develop a new strategic plan at a time when its budget is under considerable stress. SMD's Science Plan serves to provide more detail on its four traditional science disciplines - astronomy and astrophysics, solar and space physics (also called heliophysics), planetary science, and Earth remote sensing and related activities - than is possible in the agency-wide Strategic Plan. [Review of the Draft 2014 Science Mission Directorate Science Plan](#) comments on the responsiveness of SMD's Science Plan to the National Research Council's guidance on key science issues and opportunities in recent NRC decadal reports. This study focuses on attention to interdisciplinary aspects and overall scientific balance; identification and exposition of important opportunities for partnerships as well as education and public outreach; and integration of technology development with the science program. The report provides detailed findings and recommendations relating to the draft Science Plan.

Overcoming Barriers to Deployment of Plug-in Electric Vehicles - National Research Council 2015-06-26

In the past few years, interest in plug-in electric vehicles (PEVs) has grown. Advances in battery and other technologies, new federal standards for carbon-dioxide emissions and fuel economy, state zero-emission-vehicle requirements, and the current administration's goal of putting millions of alternative-fuel vehicles on the road have all highlighted PEVs as a transportation alternative. Consumers are also beginning to recognize the advantages of PEVs over conventional vehicles, such as lower operating costs, smoother operation, and better acceleration; the ability to fuel up at home; and zero tailpipe emissions when the vehicle operates solely on its battery. There are, however, barriers to PEV deployment, including the vehicle cost, the short all-electric driving range, the long battery charging time, uncertainties about battery life, the few choices of vehicle models, and the need for a charging infrastructure to support PEVs. What should industry do to improve the performance of PEVs and make them more attractive to consumers? At the request of Congress, *Overcoming Barriers to Deployment of Plug-in Electric Vehicles* identifies barriers to the introduction of electric vehicles and recommends ways to mitigate these barriers. This report examines the characteristics and capabilities of electric vehicle technologies, such as cost, performance, range, safety, and durability, and assesses how these factors might create barriers to widespread deployment. *Overcoming Barriers to Deployment of Plug-in Electric Vehicles* provides an overview of the current status of PEVs and

makes recommendations to spur the industry and increase the attractiveness of this promising technology for consumers. Through consideration of consumer behaviors, tax incentives, business models, incentive programs, and infrastructure needs, this book studies the state of the industry and makes recommendations to further its development and acceptance.

[An Assessment of the National Institute of Standards and Technology Physical Measurement Laboratory](#) - National Academies of Sciences, Engineering, and Medicine 2016-03-31

The Physical Measurement Laboratory (PML) at the National Institute of Standards and Technology (NIST) is dedicated to three fundamental and complementary tasks: (1) increase the accuracy of our knowledge of the physical parameters that are the foundation of our technology-driven society; (2) disseminate technologies by which these physical parameters can be accessed in a standardized way by the stakeholders; and (3) conduct research at both fundamental and applied levels to provide knowledge that may eventually lead to advances in measurement approaches and standards. This report assesses the scientific and technical work performed by the PML and identifies salient examples of accomplishments, challenges, and opportunities for improvement for each of its nine divisions.

Assessment of the National Science Foundation's 2015 Geospace Portfolio Review - National Academies of Sciences, Engineering, and Medicine 2017-04-28

At the request of the Advisory Committee for Geosciences of the National Science Foundation (NSF), a review of the Geospace Section of the NSF Division of Atmospheric and Geospace Sciences was undertaken in 2015. The Portfolio Review Committee was charged with reviewing the portfolio of facilities, research programs, and activities funded by Geospace Section and to recommend critical capabilities and the balance of investments needed to enable the science program articulated in the 2013 NRC decadal survey *Solar and Space Physics: A Science for a Technological Society*. The Portfolio Review Committee's report *Investments in Critical Capabilities for Geospace Science 2016 to 2025 (ICCGS)* was accepted by the Advisory Committee for Geosciences in April 2016. *Assessment of the National Science Foundation's 2015 Geospace Portfolio Review* provides an independent assessment of the ICCGS report. This publication assesses how well the ICCGS provides a clear set of findings, conclusions, and recommendations for Geospace Section that align with the science priorities of the NRC decadal survey, and adequately take into account issues such as the current budget outlook and the science needs of the community. Additionally, this study makes recommendations focused on options and considerations for NSF's implementation of the ICCGS recommendations.

African Indigenous Knowledge and the Sciences - Gloria Emeagwali 2016-07-08

This book is an intellectual journey into epistemology, pedagogy, physics, architecture, medicine and metallurgy. The focus is on various dimensions of African Indigenous Knowledge (AIK) with an emphasis on the sciences, an area that has been neglected in AIK discourse. The authors provide diverse views and perspectives on African indigenous scientific and technological knowledge that can benefit a wide spectrum of academics, scholars, students, development agents, and policy makers, in both governmental and non-governmental organizations, and enable critical and alternative analyses and possibilities for understanding science and technology in an African historical and contemporary context.

Surviving Sexism in Academia - Kirsti Cole 2017-06-26

This edited collection contends that if women are to enter into leadership positions at equal levels with their male colleagues, then sexism in all its forms must be acknowledged, attended to, and actively addressed. This interdisciplinary collection—*Surviving Sexism in Academia: Strategies for Feminist Leadership*—is part storytelling, part autoethnography, part action plan. The chapters document and analyze everyday sexism in the academy and offer up strategies for survival, ultimately "lifting the veil" from the good old boys/business-as-usual culture that continues to pervade academia in both visible and less-visible forms, forms that can stifle even the most ambitious women in their careers.

Mobile Technologies and Augmented Reality in Open Education - Kurubacak, Gulsun 2017-02-22

Novel trends and innovations have enhanced contemporary educational environments. When applied properly, these computing advances can create enriched learning opportunities for students. *Mobile Technologies and Augmented Reality in Open Education* is a pivotal reference source for the latest academic research on the integration of interactive

technology and mobile applications in online and distance learning environments. Highlighting scholarly perspectives across numerous topics such as wearable technology, instructional design, and flipped learning, this book is ideal for educators, professionals, practitioners, academics, and graduate students interested in the role of augmented reality in modern educational contexts.

Gendered Paths into STEM. Disparities Between Females and Males in STEM Over the Life-Span - Bernhard Ertl 2020-01-31

Convergence - National Research Council 2014-06-16

Convergence of the life sciences with fields including physical, chemical, mathematical, computational, engineering, and social sciences is a key strategy to tackle complex challenges and achieve new and innovative solutions. However, institutions face a lack of guidance on how to establish effective programs, what challenges they are likely to encounter, and what strategies other organizations have used to address the issues that arise. This advice is needed to harness the excitement generated by the concept of convergence and channel it into the policies, structures, and networks that will enable it to realize its goals.

Convergence investigates examples of organizations that have established mechanisms to support convergent research. This report discusses details of current programs, how organizations have chosen to measure success, and what has worked and not worked in varied settings. The report summarizes the lessons learned and provides organizations with strategies to tackle practical needs and implementation challenges in areas such as infrastructure, student education and training, faculty advancement, and inter-institutional partnerships.

Causality and Neo-Stages in Development - Gerald Young 2021-10-30

This book represents a broad integration of several major themes in psychology toward its unification. Unifying psychology is an ongoing project that has no end-point, but the present work suggests several major axes toward that end, including causality and activation-inhibition coordination. On the development side of the model building, the author has constructed an integrated lifespan stage model of development across the Piagetian cognitive and the Eriksonian socioaffective domains. The model is based on the concept of neo-stages, which mitigates standard criticisms of developmental stage models. The new work in the second half of the book extends the primary work in the first half both in terms of causality and development. Also, the area of couple work is examined from the stage perspective. Finally, new concepts related to the main themes are represented, including on the science formula, executive function, stress dysregulation disorder, inner peace, and ethics, all toward showing the rich potential of the present modeling.

Effective Computation in Physics - Anthony Scopatz 2015-06-25

More physicists today are taking on the role of software developer as part of their research, but software development isn't always easy or obvious, even for physicists. This practical book teaches essential software development skills to help you automate and accomplish nearly any aspect of research in a physics-based field. Written by two PhDs in nuclear engineering, this book includes practical examples drawn from a working knowledge of physics concepts. You'll learn how to use the Python programming language to perform everything from collecting and analyzing data to building software and publishing your results. In four parts, this book includes: Getting Started: Jump into Python, the command line, data containers, functions, flow control and logic, and classes and objects Getting It Done: Learn about regular expressions, analysis and visualization, NumPy, storing data in files and HDF5, important data structures in physics, computing in parallel, and deploying software Getting It Right: Build pipelines and software, learn to use local and remote version control, and debug and test your code Getting It Out There: Document your code, process and publish your findings, and collaborate efficiently; dive into software licenses, ownership, and copyright procedures

Statistical Challenges in Assessing and Fostering the

Reproducibility of Scientific Results - National Academies of Sciences, Engineering, and Medicine 2016-02-29

Questions about the reproducibility of scientific research have been raised in numerous settings and have gained visibility through several high-profile journal and popular press articles. Quantitative issues contributing to reproducibility challenges have been considered (including improper data measurement and analysis, inadequate statistical expertise, and incomplete data, among others), but there is no clear consensus on how best to approach or to minimize these problems. A lack of reproducibility of scientific results has created some distrust in

scientific findings among the general public, scientists, funding agencies, and industries. While studies fail for a variety of reasons, many factors contribute to the lack of perfect reproducibility, including insufficient training in experimental design, misaligned incentives for publication and the implications for university tenure, intentional manipulation, poor data management and analysis, and inadequate instances of statistical inference. The workshop summarized in this report was designed not to address the social and experimental challenges but instead to focus on the latter issues of improper data management and analysis, inadequate statistical expertise, incomplete data, and difficulties applying sound statistical inference to the available data. Many efforts have emerged over recent years to draw attention to and improve reproducibility of scientific work. This report uniquely focuses on the statistical perspective of three issues: the extent of reproducibility, the causes of reproducibility failures, and the potential remedies for these failures.

The Sensory Order and Other Writings on the Foundations of Theoretical Psychology - F.A Hayek 2017-07-28

The Sensory Order, first published in 1952, sets forth F. A. Hayek's classic theory of mind in which he describes the mental mechanism that classifies perceptions that cannot be accounted for by physical laws. Hayek's substantial contribution to theoretical psychology has been addressed in the work of Thomas Szasz, Gerald Edelman, and Joaquin Fuster.

An Introduction to Physical Science - James T. Shipman 2007-12-01

An Introduction to Physical Science presents a survey of the physical sciences--physics, chemistry, astronomy, meteorology, and geology--for non-science majors. Topics are treated both descriptively and quantitatively, providing flexibility for instructors who wish to emphasize a highly descriptive approach, a highly quantitative approach, or anything in between. Time-tested pedagogical tools address the needs of a range of learning styles: concepts to be treated mathematically are consistently introduced from three perspectives (definition, word equation, symbol notation); Confidence Exercises follow in-text Examples, giving students an opportunity for immediate practice and reinforcement; and updated Spotlight On features use figures, photos, or flowcharts to visually summarize important topics. The Twelfth Edition includes new content and features that help students better visualize concepts, master basic math, and practice problem solving. In response to instructor feedback, new end-of-chapter problems appear throughout the text and sections on astronomy have been updated. A dynamic technology package combines course management and testing resources as well as online support for students. The Twelfth Edition is available in both a hardcover version and, at a reduced price, a paperback version, giving students flexible options to meet their needs.

Bayesian Models for Astrophysical Data - Joseph M. Hilbe 2017-04-27

This comprehensive guide to Bayesian methods in astronomy enables hands-on work by supplying complete R, JAGS, Python, and Stan code, to use directly or to adapt. It begins by examining the normal model from both frequentist and Bayesian perspectives and then progresses to a full range of Bayesian generalized linear and mixed or hierarchical models, as well as additional types of models such as ABC and INLA. The book provides code that is largely unavailable elsewhere and includes details on interpreting and evaluating Bayesian models. Initial discussions offer models in synthetic form so that readers can easily adapt them to their own data; later the models are applied to real astronomical data. The consistent focus is on hands-on modeling, analysis of data, and interpretations that address scientific questions. A must-have for astronomers, its concrete approach will also be attractive to researchers in the sciences more generally.

Interim Report of the Committee on a Strategic Plan for U.S.

Burning Plasma Research - National Academies of Sciences, Engineering, and Medicine 2018-03-19

In January 2003, President George W. Bush announced that the United States would begin negotiations to join the ITER project and noted that "if successful, ITER would create the first fusion device capable of producing thermal energy comparable to the output of a power plant, making commercially viable fusion power available as soon as 2050." The United States and the other ITER members are now constructing ITER with the aim to demonstrate that magnetically confined plasmas can produce more fusion power than the power needed to sustain the plasma. This is a critical step towards producing and delivering electricity from fusion energy. Since the international establishment of the ITER project, ITER's construction schedule has slipped and ITER's costs have increased significantly, leading to questions about whether the United States should continue its commitment to participate in ITER.

This study will advise how to best advance the fusion energy sciences in the United States given developments in the field, the specific international investments in fusion science and technology, and the priorities for the next ten years developed by the community and the Office of Fusion Energy Sciences (FES) that were recently reported to Congress. It will address the scientific justification and needs for strengthening the foundations for realizing fusion energy given a potential choice of U.S. participation or not in the ITER project, and develops future scenarios in either case. This interim report assesses the current status of U.S. fusion research and of the importance of burning plasma research to the development of fusion energy as well as to plasma science and other science and engineering disciplines. The final report will present strategies that incorporate continued progress toward a burning plasma experiment and a focus on innovation.

Final Report of the Committee on a Strategic Plan for U.S. Burning Plasma Research - National Academies of Sciences, Engineering, and Medicine 2019-07-01

Fusion offers the prospect of virtually unlimited energy. The United States and many nations around the world have made enormous progress toward achieving fusion energy. With ITER scheduled to go online within a decade and demonstrate controlled fusion ten years later, now is the right time for the United States to develop plans to benefit from its investment in burning plasma research and take steps to develop fusion electricity for the nation's future energy needs. At the request of the Department of Energy, the National Academies of Sciences, Engineering, and Medicine organized a committee to develop a strategic plan for U.S. fusion research. The final report's two main recommendations are: (1) The United States should remain an ITER partner as the most cost-effective way to gain experience with a burning plasma at the scale of a power plant. (2) The United States should start a national program of accompanying research and technology leading to the construction of a compact pilot plant that produces electricity from fusion at the lowest possible capital cost.

Advances in Geocomputation - Daniel A. Griffith 2017-01-03

This book contains refereed papers from the 13th International Conference on GeoComputation held at the University of Texas, Dallas, May 20-23, 2015. Since 1996, the members of the GeoComputation (the art and science of solving complex spatial problems with computers) community have joined together to develop a series of conferences in the United Kingdom, New Zealand, Australia, Ireland and the United States of America. The conference encourages diverse topics related to novel methodologies and technologies to enrich the future development of GeoComputation research.

Peer Review and Design Competition in the NNSA National Security Laboratories - National Academies of Sciences, Engineering, and Medicine 2016-01-07

The National Nuclear Security Administration (NNSA) is responsible for providing and maintaining the capabilities necessary to sustain a safe, secure, and reliable nuclear weapons stockpile for the nation and its allies. Major responsibility for meeting the NNSA missions falls to the three NNSA laboratories: Los Alamos National Laboratory (LANL), Lawrence Livermore National Laboratory (LLNL), and Sandia National Laboratories (SNL). The NNSA National Security Laboratories contribute to that goal by maintaining the skills and capabilities necessary for stewardship of a reliable nuclear stockpile and also by maintaining a high level of technical credibility, which is a component of the nuclear deterrent. Since 1992 it has been U.S. policy not to conduct explosion tests of nuclear weapons. The resulting technical challenges have been substantial. Whereas a nuclear test was in some sense the ultimate "peer review" of the performance of a particular NEP design, the cessation of nuclear testing necessitated a much greater reliance on both intralab and interlab expert peer review to identify potential problems with weapon designs and define the solution space. This report assesses the quality and effectiveness of peer review of designs, development plans, engineering and scientific activities, and priorities related to both nuclear and non-nuclear aspects of nuclear weapons, as well as incentives for effective peer review. It also explores how the evolving mission of the NNSA laboratories might impact peer review processes at the laboratories that relate to nuclear weapons.

Frontiers of Engineering - National Academy of Engineering 2016-02-01

This volume presents papers on the topics covered at the National Academy of Engineering's 2015 US Frontiers of Engineering Symposium. Every year the symposium brings together 100 outstanding young leaders in engineering to share their cutting-edge research and

innovations in selected areas. The 2015 symposium was held September 9-11 at the Arnold and Mabel Beckman center in Irvine, California. The intent of this book is to highlight innovative developments in engineering research and technical work.

The Conflicted Superpower - Andrew Kennedy 2018-05-22

For decades, leadership in technological innovation has sustained U.S. power worldwide. Today, however, processes that undergird innovation increasingly transcend national borders. Cross-border flows of brainpower have reached unprecedented heights, while multinationals invest more and more in high-tech facilities abroad. In this new world, U.S. technological leadership increasingly involves collaboration with other countries. China and India have emerged as particularly prominent partners, most notably as suppliers of intellectual talent to the United States. In *The Conflicted Superpower*, Andrew Kennedy explores how the world's most powerful country approaches its growing collaboration with these two rising powers. Whereas China and India have embraced global innovation, policy in the United States is conflicted. Kennedy explains why, through in-depth case studies of U.S. policies toward skilled immigration, foreign students, and offshoring. These make clear that U.S. policy is more erratic than strategic, the outcome of domestic battles between competing interests. Pressing for openness is the "high-tech community"—the technology firms and research universities that embody U.S. technological leadership. Yet these pro-globalization forces can face resistance from a range of other interests, including labor and anti-immigration groups, and the nature of this resistance powerfully shapes just how open national policy is. Kennedy concludes by asking whether U.S. policies are accelerating or slowing American decline, and considering the prospects for U.S. policy making in years to come.

Materials for the 21st Century - David Segal 2017-05-19

What does cotton candy, which dissolves at the touch, have in common with Kevlar, used for bullet-proof vests? How can our understanding of such materials help us to tackle essential problems of the 21st century? Materials play a key role in our search for solutions to many pressing issues. They underpin many industries, are critical for the development of consumer goods, are essential components of medical diagnostic techniques, offer hope for the treatment of currently incurable diseases, and provide answers to environmental problems. This handbook is a guide to the materials we rely on for the future. *Materials for the 21st Century* serves as a useful resource for undergraduate and high school students preparing for a career in physical sciences, life sciences, or engineering, by helping them to identify new areas of interest. It is also an excellent reference for readers interested in learning more about the diverse range of materials that underlie key aspects of our economy and everyday lives.

The SAGE Handbook of Coaching - Tatiana Bachkirova 2016-11-03

The SAGE Handbook of Coaching presents a comprehensive, global view of the discipline, identifying the current issues and practices, as well as mapping out where the discipline is going. The Handbook is organized into six thematic sections: Part One: Positioning Coaching as a Discipline Part Two: Coaching as a Process Part Three: Common Issues in Coaching Part Four: Coaching in Contexts Part Five: Researching Coaching Part Six: Development of Coaches It provides the perfect reference point for graduate students, scholars, educators and researchers wishing to familiarize themselves with current research and debate in the academic and influential practitioners' literature on coaching.

Critical Systems Thinking and the Management of Complexity - Michael C. Jackson 2019-04-08

From the winner of the INCOSE Pioneer Award 2022 The world has become increasingly networked and unpredictable. Decision makers at all levels are required to manage the consequences of complexity every day. They must deal with problems that arise unexpectedly, generate uncertainty, are characterised by interconnectivity, and spread across traditional boundaries. Simple solutions to complex problems are usually inadequate and risk exacerbating the original issues. Leaders of international bodies such as the UN, OECD, UNESCO and WHO — and of major business, public sector, charitable, and professional organizations — have all declared that systems thinking is an essential leadership skill for managing the complexity of the economic, social and environmental issues that confront decision makers. Systems thinking must be implemented more generally, and on a wider scale, to address these issues. An evaluation of different systems methodologies suggests that they concentrate on different aspects of complexity. To be in the best position to deal with complexity, decision makers must understand the strengths and weaknesses of the various approaches and learn how to employ them in combination. This is called critical systems thinking.

Making use of over 25 case studies, the book offers an account of the development of systems thinking and of major efforts to apply the approach in real-world interventions. Further, it encourages the widespread use of critical systems practice as a means of ensuring responsible leadership in a complex world. The INCOSE Pioneer Award is presented to someone who, by their achievements in the engineering of systems, has contributed uniquely to major products or outcomes enhancing society or meeting its needs. The criteria may apply to a single outstanding outcome or a lifetime of significant achievements in effecting successful systems. Comments on a previous version of the book: Russ Ackoff: 'the book is the best overview of the field I have seen' JP van Gigch: 'Jackson does a masterful job. The book is lucid ...well written and eminently readable' Professional Manager (Journal of the Chartered Management Institute): 'Provides an excellent guide and introduction to systems thinking for students of management'

Handbook of Behavioral and Cognitive Geography - Daniel R. Montello 2018

This comprehensive Handbook summarizes existing work and presents new concepts and empirical results from leading scholars in the multidisciplinary field of behavioral and cognitive geography, the study of the human mind, and activity in and concerning space, place, and environment. It provides the broadest and most inclusive coverage of the field so far, including work relevant to human geography, cartography, and geographic information science.

The Centrality of Sociality - Jeffrey A. Halley 2022-12-12

What do we mean by the word "social?" In *The Centrality of Sociality*, scholars respond to themes of *The Concept of the Social in Uniting the Social Sciences and Humanities* in dialogue with Michael E. Brown.

IFRS in a Global World - Didier Bensadon 2016-05-13

This book, dedicated to Prof. Jacques Richard, is about the economic, political, social and even environmental consequences of setting accounting standards, with emphasis on those that are alleged to be precipitated by the adoption and implementation of IFRS. The authors offer their reasoned critiques of the effectiveness of IFRS in promoting genuine global comparability of financial reporting. The editors of this collection have invited authors from 17 countries, so that a great variety of accounting, auditing and regulatory cultures, and educational perspectives, is amply on display in their essays.

Mathematics for Physical Science and Engineering - Frank E. Harris 2014-05-24

Mathematics for Physical Science and Engineering is a complete text in mathematics for physical science that includes the use of symbolic computation to illustrate the mathematical concepts and enable the solution of a broader range of practical problems. This book enables professionals to connect their knowledge of mathematics to either or both of the symbolic languages Maple and Mathematica. The book begins by introducing the reader to symbolic computation and how it can be applied to solve a broad range of practical problems. Chapters cover topics that include: infinite series; complex numbers and functions; vectors and matrices; vector analysis; tensor analysis; ordinary differential equations; general vector spaces; Fourier series; partial differential equations; complex variable theory; and probability and statistics. Each important concept is clarified to students through the use of a simple example and often an illustration. This book is an ideal reference for upper level undergraduates in physical chemistry, physics, engineering, and advanced/applied mathematics courses. It will also appeal to graduate physicists, engineers and related specialties seeking to address practical problems in physical science. Clarifies each important concept to students through the use of a simple example and often an illustration Provides quick-reference for students through multiple appendices, including an overview of terms in most commonly used applications (Mathematica, Maple) Shows how symbolic computing enables solving a broad range of practical problems

Biofertilizers for Sustainable Agriculture and Environment - Bhoopander Giri 2019-08-09

This book provides a comprehensive overview of the benefits of biofertilizers as an alternative to chemical fertilizers and pesticides. Agricultural production has increased massively over the last century due to increased use of chemical fertilizers and pesticides, but these gains have come at a price. The chemicals are not only expensive; they also reduce microbial activity in agricultural soils and accumulate in the food chain, with potentially harmful effects for humans. Accordingly, it is high time to explore alternatives and to find solutions to overcome our increasing dependence on these chemicals. Biofertilizers, which consist of plant remains, organic matter and microorganisms, might offer an

alternative. They are natural, organic, biodegradable, eco-friendly and cost-effective. Further, the microbes present in the biofertilizers are important, because they produce nutrients required for plant growth (e.g., nitrogen, phosphorus, potassium), as well as substances essential for plant growth and development (e.g., auxins and cytokinins). Biofertilizers also improve the physical properties, fertility and productivity of soil, reducing the need for chemical fertilizers while maintaining high crop yield. This makes biofertilizers a powerful tool for sustainable agriculture and a sustainable environment. The book covers the latest research on biofertilizers, ranging from beneficial fungal, bacterial and algal inoculants; to microbes for bioremediation, wastewater treatment; and recycling of biodegradable municipal, agricultural and industrial waste; as well as biocontrol agents and bio-pesticides. As such, it offers a valuable resource for researchers, academics and students in the broad fields of microbiology and agriculture.

Mentoring in Nursing and Healthcare - Helen M. Woolnough 2017-01-17

Mentoring in Nursing and Healthcare: Supporting career and personal development is an innovative look into mentoring within nursing, and its implications for career success. It provides an up-to-date review of the current research and literature within mentoring in nursing and healthcare, drawing together the distinctive challenges facing nurses and their career development. It proposes new directions and practical ways forward for the future development of formal mentoring programmes in nursing. Offering fresh insight into mentoring principles and how these can be used beyond pre-registration nurse education to support personal career development. This is an essential book for all those commencing, continuing or returning to a nursing career. Key features: Addresses mentoring as a career development tool Focuses on the individual benefits of being a mentee and mentor and how this can aid professional development Both theoretical and practical material is presented Features case studies throughout book Supports nurses to develop their careers It is sector specific but has transferability across disciplines A summary chapter draws together common threads or theoretical perspectives. The book concludes with strategies for future research and progress

The Underrepresentation of Women in Science: International and Cross-Disciplinary Evidence and Debate - Stephen J. Ceci 2018-04-20

There is no shortage of articles and books exploring women's underrepresentation in science. Everyone is interested--academics, politicians, parents, high school girls (and boys), women in search of college majors, administrators working to accommodate women's educational interests; the list goes on. But one thing often missing is an evidence-based examination of the problem, uninfluenced by personal opinions, accounts of "lived experiences," anecdotes, and the always-encroaching inputs of popular culture. This is why this special issue of *Frontiers in Psychology* can make a difference. In it, a diverse group of authors and researchers with even more diverse viewpoints find themselves united by their empirical, objective approaches to understanding women's underrepresentation in science today. The questions considered within this special issue span academic disciplines, methods, levels of analysis, and nature of analysis; what these articles share is their scholarly, evidence-based approach to understanding a key

issue of our time.

Bulk Collection of Signals Intelligence - National Research Council 2015-03-24

The Bulk Collection of Signals Intelligence: Technical Options study is a result of an activity called for in Presidential Policy Directive 28 (PPD-28), issued by President Obama in January 2014, to evaluate U.S. signals intelligence practices. The directive instructed the Office of the Director of National Intelligence (ODNI) to produce a report within one year "assessing the feasibility of creating software that would allow the intelligence community more easily to conduct targeted information acquisition rather than bulk collection." ODNI asked the National Research Council (NRC) -- the operating arm of the National Academy of Sciences and National Academy of Engineering -- to conduct a study, which began in June 2014, to assist in preparing a response to the President. Over the ensuing months, a committee of experts appointed by the Research Council produced the report.

On the Connection of the Physical Sciences - Mary Somerville 1846

Qualitative and Digital Research in Times of Crisis - Kara, Helen 2021-11-29

Crises such as the COVID-19 pandemic, disasters, or violent conflict present numerous challenges for researchers. Faced with disruption, obstacles, and even danger to their own lives, researchers in times of crisis must adapt or redesign existing research methods in order to continue their work effectively. Including contributions on qualitative and digital research from Europe, Asia, Africa, Australasia, and the Americas, this volume explores the creative and thoughtful ways in which researchers have adapted methods and rethought relationships in response to challenges arising from crises. Their collective reflections, strategies, and practices highlight the importance of responsive, ethical, and creative research design and the need to develop methods for fostering mutual, reflexive, and healthy relationships in times of crisis.

A Practical Guide to Teaching Science in the Secondary School - Douglas P. Newton 2022-11-16

A Practical Guide to Teaching Science in the Secondary School is designed to support student teachers as they develop their teaching skills and increase their broader knowledge and understanding for teaching science. It offers straightforward advice and inspiration on key topics such as planning, assessment, practical work, the science classroom, and on to the broader aspects of teaching science. This thoroughly updated second edition reflects on new expectations, requirements, and practices in science teaching, with chapters exploring key and contemporary topics such as: The nature of science and scientific argument The various kinds of thinking emphasised in science and how to exercise them How to engage students in learning Assessment for and of learning Diverse needs and how to meet them The use of technology to support teaching and learning Learning at a distance. Designed to be used independently or alongside the popular textbook *Learning to Teach Science in the Secondary School*, this book is packed with revised and updated case studies, examples of pupils' work, and resources and activities in every chapter. It provides everything trainee and early career teachers need to reflect on and develop their teaching practice, helping them to plan lessons across the subject in a variety of teaching situations.