

N5 Engineering Science

South Africa has made huge gains in ensuring universal enrolment for children at school, and in restructuring and recapitalising the FET college sector. However, some three million young people are not in education, employment or training and the country faces serious challenges in providing its youth with the pathways and support they need to transition successfully into a differentiated system of post-school education and training. Across nine evidence-based chapters, 17 authors offer a succinct overview of the different facets of post-school provision in South Africa. These include an analysis of the impact of the national qualifications system on occupational training, the impact of youth unemployment, the capacity of the post-school system to absorb larger numbers of young people, the relationship between universities and FET colleges, the need for more strategic public and private investment in skills development, and a youth perspective on education and training policy. The authors have a number of recommendations for improving the alignment between schooling, further education and training, and university education - interventions that could shape the future of our youth.

Presents an overview of genetic engineering, detailing its history, its techniques, and its controversial application in the cloning of animals, modification of foods, genome mapping, DNA profiling, and treatment of disease.

Systems engineering (SE) is experiencing a significant expansion that encompasses increasingly complex systems. However, a common body of knowledge on how to apply complex systems engineering (CSE) has yet to be developed. A combination of people and other autonomous agents, crossing organization boundaries and continually changing, these hybrid systems are less predictable while being more self-organizing and adaptive than traditional systems. The growing pains of this evolution and the ever-widening reach of SE technology require an effective foundation for integrating traditional and complex engineering methods, addressing machine and human interaction, as well as scaling up and down, from nano scale to the macro system-of-systems level. Model-oriented Systems Engineering Science: A Unifying Framework for Traditional and Complex Systems addresses solutions to that expansion and integration problem. This text takes advantage of better-understood systems science (SS) to support the transition, identifying and using commonalities between complex systems and other sciences, such as biology, sociology, cognitive science, organizational theory, and computational science. The author defines Model-oriented Systems Engineering Science (MOSES), an organized system that selects appropriate information from these disciplines and unifies it into a coherent framework. The result is a seamless approach to the class of systems across the extended scope of the new SE—a foundation upon which to develop an enhanced and unified SE. Modeling orientation (MO) provides a common perspective on the entire SES/SE enterprise, including all supporting sciences, engineering for the full range of traditional, complex, and hybrid systems, and their management. This book extends existing modeling approaches into an MO that views all science artifacts and engineering artifacts as models of systems. It organizes them into a virtual structured repository called the "SE model space"—effectively a container for the accumulating body of SE and SES knowledge in the form of models and patterns. By organizing and integrating all these elements into a common framework, the author makes the material not only easily accessible but also immediately applicable, and provides a well-grounded basis for future growth and evolution of the SE discipline.

Higher Engineering Science aims to provide students with an understanding of the scientific principles that underpin the design and operation of modern engineering systems. It builds a sound scientific foundation for further study of electronics, electrical engineering and mechanical engineering. The text is ideal for students, including numerous features designed to aid student learning and put theory into practice: * Worked examples with step-by-step guidance and hints * Highlighted key points, applications and practical activities * Self-check questions included throughout the text * Problems sections with full answers supplied Further worked examples, applications, case studies and assignments have also been incorporated into this second edition. Assuming a minimum of prior knowledge, the book has been written to suit courses with an intake from a range of educational backgrounds. The new edition has been designed specifically to cater for the compulsory core Engineering Science unit for HNC and HND qualifications, and updated throughout to match the syllabus of the new BTEC Higher National Engineering schemes from Edexcel. It will also prove ideal for introductory science modules in degree courses.

Containing information in a user-friendly format, this directory sets out to help the distance learner make an informed career choice, and look up the correct information on where and what to study.

Higher National Engineering 2nd Edition is a new edition of this extremely successful course book, covering the compulsory core units of the 2003 BTEC Higher National Engineering schemes. Full coverage is given of the common core units for HNC/D (units 1 - 3) for all pathways, as well as the two different Engineering Principles units (unit 5) for mechanical and electrical/electronic engineering, and the additional unit required at HND for these pathways (Engineering Design - unit 6). Students following the HNC and HND courses will find this book essential reading, as it covers the core material they will be following through the duration of their course. Knowledge-check questions and activities are included throughout, along with learning summaries, innovative 'Another View' features, and applied maths integrated alongside the appropriate areas of engineering studies. The result is a clear, straightforward and easily accessible text, which encourages independent study. Like the syllabus itself, this book is ideal for students progressing to HNC/HND from AVCE, as well as A-Level and BTEC National. The topics covered are also suitable reading for students following BTEC Foundation Degrees in Engineering/Technology, as well as Foundation Degrees in Engineering run by UK institutions nationwide.

This book consists of one hundred and seventeen selected papers presented at the 2015 International Conference on Electronics, Electrical Engineering and Information Science (EEEIS2015), which was held in Guangzhou, China, during August 07-09, 2015. EEEIS2015 provided an excellent international exchange platform for researchers to share their knowledge and results and to explore new areas of research and development. Global researchers and practitioners will find coverage of topics involving Electronics Engineering, Electrical Engineering, Computer Science, Technology for Road Traffic, Mechanical Engineering, Materials Science and Engineering Management. Experts in these fields contributed to the collection of research results and development activities. This book will be a valuable reference for researchers working in the field of Electronics, Electrical Engineering and Information Science. Contents: Electronics Engineering Electrical Engineering Computer Science and Application Technology for Road Traffic Mechanical Engineering Material Science and Material Processing Technology Engineering Management Readership: Researchers working in the field of Electronics, Electrical Engineering and Information Science.

The book provides an introduction to the mechanics of composite materials, written for graduate students and practitioners in industry. It examines ways to model the impact event, to determine the size and severity of the damage and discusses general

trends observed during experiments.

A guide to the important chemical engineering concepts for the development of new drugs, revised second edition The revised and updated second edition of Chemical Engineering in the Pharmaceutical Industry offers a guide to the experimental and computational methods related to drug product design and development. The second edition has been greatly expanded and covers a range of topics related to formulation design and process development of drug products. The authors review basic analytics for quantitation of drug product quality attributes, such as potency, purity, content uniformity, and dissolution, that are addressed with consideration of the applied statistics, process analytical technology, and process control. The 2nd Edition is divided into two separate books: 1) Active Pharmaceutical Ingredients (API's) and 2) Drug Product Design, Development and Modeling. The contributors explore technology transfer and scale-up of batch processes that are exemplified experimentally and computationally. Written for engineers working in the field, the book examines in-silico process modeling tools that streamline experimental screening approaches. In addition, the authors discuss the emerging field of continuous drug product manufacturing. This revised second edition: Contains 21 new or revised chapters, including chapters on quality by design, computational approaches for drug product modeling, process design with PAT and process control, engineering challenges and solutions Covers chemistry and engineering activities related to dosage form design, and process development, and scale-up Offers analytical methods and applied statistics that highlight drug product quality attributes as design features Presents updated and new example calculations and associated solutions Includes contributions from leading experts in the field Written for pharmaceutical engineers, chemical engineers, undergraduate and graduation students, and professionals in the field of pharmaceutical sciences and manufacturing, Chemical Engineering in the Pharmaceutical Industry, Second Edition contains information designed to be of use from the engineer's perspective and spans information from solid to semi-solid to lyophilized drug products.

Comprised of research articles written for a major international conference, this book covers the state-of-the-art in communication systems and engineering science. Topics covered include network management, wireless networks, electronics, and many others.

Trends in Communication Technologies and Engineering Science Springer Science & Business Media

This book contains eight papers from a detailed study of technical college provision in KwaZulu-Natal, South Africa, that raised the following four issues relevant to the transformation of technical colleges across South Africa: (1) the teaching and learning environment at technical colleges is suboptimal; (2) social relations at the technical colleges are tense, with few institutions having successfully come to terms with the rapid deracialization of student enrollments in recent years; (3) the labor market surrounding technical colleges appears totally dysfunctional, with few students obtaining employment after technical college training; and (4) the separate development policies of the past necessitate institutional restructuring. The following papers are included: "A Study of Technical Colleges in KwaZulu-Natal: A Methodological Introduction" (Andre Kraak, Graham Hall); "Problems Facing Further Education and Training" (Andre Kraak); "Planning Imperative: New Policy Framework in FET [Further Education and Training]" (Andre Kraak); "Socio-Economic and Educational Profile of KwaZulu-Natal" (Nisaar Mahomed); "Quantitative Overview of the Technical Colleges of KwaZulu-Natal" (Graham Hall); "Learning, Teaching and Management Environment: Evidence from Qualitative Studies" (Andre Kraak); "Autonomy and Responsiveness: Evidence from the Qualitative Case Studies" (Andre Kraak); and "Critical Overview: The Need for Labour Market and Institutional Reform" (Andre Kraak). The bibliography contains 52 references. (MN)

Research on molecule-based magnetic materials was systematized in the 1980s and expanded rapidly. A Special Issue focusing on molecule-based magnetic substances was published in Magnetochemistry. However, the functionalities of the substances increase daily; therefore, the researchers' quest is not yet in decline. Research on molecule-based magnetism developed across many fields, including chemistry, physics, material chemistry, and applied physics, and the use of the various functionalities of these molecule-based magnetic substances has greatly influenced research on spin-based devices. In honor of Professor Masahiro Yamashita, who contributed greatly to this field, I have put together a Special Issue that highlights ten groundbreaking articles. The issue is entitled, "A Themed Issue of Functional Molecule-Based Magnets: Dedicated to Professor Masahiro Yamashita on the Occasion of his 65th Birthday". I wish to thank the authors for their dedicated work, and the referees and editorial staff for the time they invested commenting on the articles.

Newnes Engineering Science Pocket Book is a uniquely versatile and practical tool for a wide range of engineers and students. All the fundamentals of electrical and mechanical engineering science and physics are covered, with an emphasis on concise descriptions, key methods, clear diagrams, formulae and how to use them. John Bird's presentations of this core material puts all the answers at your fingertips. The contents of this book have been carefully matched to the latest Further and Higher Education syllabuses so that it can also be used as a revision guide or a quick-access source of underpinning knowledge. Students on competence-based courses such as NVQs will find this approach particularly refreshing and practical. This book and its companion title, Newnes Engineering Mathematics Pocket Book, provide the underpinning knowledge for the whole range of engineering communities catered for by the Newnes Pocket Book series. These related titles include: Newnes Mechanical Engineer's Pocket Book (Timings) Newnes Electrical Pocket Book (Reeves) Newnes Electronic Engineer's Pocket Book (Carr & Brindley) Newnes Radio and RF Engineer's Pocket Book (Carr & Davies) Newnes Telecommunications Engineer's Pocket Book (Winder) Previous editions of Newnes Engineering Science Pocket Book were published under the title Newnes Engineering and Physical Science Pocket Book.

A food system is sustainable if it delivers food and nutrition security for all without compromising the economic, social, and environmental bases to generate food security and nutrition for future generations. Sustainable food systems are vital in ensuring global health and ending malnutrition in all its forms. Assessing important dimensions of the food system such as nutrition, sustainable agriculture, food loss and waste can provide stakeholders with necessary information to evaluate the strength of their country's food systems and determine where more support is needed. Developing Sustainable Food Systems, Policies, and Securities is a pivotal reference source that explores the nature, extent, and causes of nutrition problems across the world as well as the role that agricultural policy plays in these issues. The book supports the development of sustainable food systems, policy options, and securities by various countries in order to

successfully maintain sustainable food production systems. Featuring research topics such as food security, carbon emissions, and nutrition, the book is ideally designed for economists, environmentalists, food producers, policymakers, researchers, academicians, and students seeking coverage on agricultural and sustainability issues.

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