

1 Tu Delft Ocw

Over the past twenty years, the knowledge and understanding of wastewater treatment has advanced extensively and moved away from empirically based approaches to a fundamentally-based first principles approach embracing chemistry, microbiology and physical and bioprocess engineering, often involving experimental laboratory work and techniques. Many of these experimental methods and techniques have matured to the degree that they have been accepted as reliable tools in wastewater treatment research and practice. For sector professionals, especially a new generation of young scientists and engineers entering the wastewater treatment profession, the quantity, complexity and diversity of these new developments can be overwhelming, particularly in developing countries where access to advanced level laboratory courses in wastewater treatment is not readily available. In addition, information on innovative experimental methods is scattered across scientific literature and only partially available in the form of textbooks or guidelines. This book seeks to address these deficiencies. It assembles and integrates the innovative experimental methods developed by research groups and practitioners around the world. Experimental Methods in Wastewater Treatment forms part of the internet-based curriculum in wastewater treatment at UNESCO-IHE and, as such, may also be used together with video records of experimental methods performed and narrated by the authors including guidelines on what to do and what not to do. The book is written for undergraduate and postgraduate students, researchers, laboratory staff, plant operators, consultants, and other sector professionals.

Containing papers presented at the 9th International Conference on Sustainable Development and Planning this volume brings together the work of academics, policy makers, practitioners and other international stakeholders and discusses new academic findings and their application in planning and development strategies, assessment tools and decision making processes. Problems related to development and planning are present in all areas and regions of the world. Accelerated urbanisation has resulted in both the deterioration of the environment and quality of life. Taking into consideration the interaction between different regions, developing new methodologies for monitoring, planning and implementation, new strategies can offer solutions mitigating environmental pollution and non-sustainable use of available resources. Energy saving and eco-friendly buildings have become an important part of modern day progress with emphasis on resource optimisation. Planning is a key part in ensuring that these solutions along with new materials and processes are efficiently incorporated. Planners, environmentalists, architects, engineers and economists have to work collectively to ensure that present and future needs are met. The papers in the book cover a number of topics, including: City planning; Regional planning; Rural developments; Sustainability and the built environment; Sustainability supply chain; Resilience; Environmental management; Energy resources; Cultural heritage; Quality of life; Sustainable solutions in emerging countries; Sustainable tourism; Learning from nature; Transportation; Social and political issues; Community planning; UN Sustainable Development Goals and Timber Structures.

This book discusses the role of regional design and visioning in the formation of regional territorial governance to offer a better understanding of (1) how a recognition of spatial dynamics and the visualization of spatial futures informs, and is informed by, planning frameworks and (2) how such design processes inform co-operation and collaboration on planning in metropolitan regions. It gathers theoretical reflections on these topics, and illustrates them by means of practical experiences in several European countries. Innovatively associating ideas with knowledge, it appeals to anyone with an interest in planning experiments in a post-regulative era. It aims at an increased understanding of how practices, engaged with the imagination of possible futures, support the creation of institutional capacity for strategic spatial planning at regional scales.

This book comprises the proceedings of the International Conference on Transformations in Engineering Education conducted jointly by BVB College of Engineering & Technology, Hubli, India and Indo US Collaboration for Engineering Education (IUCEE). This event is done in collaboration with International Federation of Engineering Education Societies (IFEES), American Society for Engineering Education (ASEE) and Global Engineering Deans' Council (GEDC). The conference is about showcasing the transformational practices in Engineering Education space.

Shaping Regional Futures

Fundamentals, Technology and Systems

EMOOCs 2021

Advanced Transport Phenomena

An Introduction to Traffic Flow Theory

Non-equilibrium Thermodynamics For Engineers (Second Edition)

The HVDC Light[®] method of transmitting electric power. Introduces students to an important new way of carrying power to remote locations. Revised, reformatted Instructor's Manual. Provides instructors with a tool that is much easier to read. Clear, practical approach.

Blending history and biography with discussion of engineering concepts, and the development of flight through this perspective, this text includes new content covering the last days of the Concorde, the centennial of the Wright Brothers' flight, and the Mariner and Voyager 2 missions.

Making Room for People elaborates on preferences in housing. It explores how users, occupants, and citizens can express their needs, searching for the enhancement of individual choice and control over their residential environment, and the predicted positive spin-off's for urban collectives. The central question is: What are the conditions under which an increase of people's choice and voice over the places they inhabit contribute to more liveable urban areas? The options to make choices and to have a say in urban design and housing matters are used as a conceptual framework. "Choice" and "voice" are the main concepts that structure the empirical material.

Introduction to Mechatronic Design is ideal for upper level and graduate Mechatronics courses in Electrical, Computing, or Mechanical & Aerospace Engineering. Unlike other texts on mechatronics that focus on derivations and calculations, Introduction to Mechatronics, 1e,

takes a narrative approach, emphasizing the importance of building intuition and understanding before diving into the math. The authors believe that integration is the core of mechatronics and students must have a command of each of the domains to create the balance necessary for successful mechatronic design and devote sections of the book to each area, including mechanical, electrical, and software disciplines, as well as a section on system design and engineering. A robust package of teaching and learning resources accompanies the book.

The Giant Vesicle Book

Principles of Rock Mechanics

Buckling of Structures

Identification of Nonlinear Physiological Systems

Aerobic Granular Sludge

Sustainable Development and Planning IX

This open access book is unique in its contents. No other title in the book market has tackled this important subject. It introduces innovation as a way of practice for world-class universities. It, then, discusses the criteria for being innovative in the academic world. The book selects some of the top innovative world-class universities to study the factors that qualified them to be innovative, so that any other university can follow their steps to become innovative. The final chapter of the book presents some recommendations in this regard.

From June 22 to June 24, 2021, Hasso Plattner Institute, Potsdam, hosted the seventh European MOOC Stakeholder Summit (EMOOCs 2021) together with the eighth ACM Learning@Scale Conference. Due to the COVID-19 situation, the conference was held fully online. The boost in digital education worldwide as a result of the pandemic was also one of the main topics of this year's EMOOCs. All institutions of learning have been forced to transform and redesign their educational methods, moving from traditional models to hybrid or completely online models at scale. The learnings, derived from practical experience and research, have been explored in EMOOCs 2021 in six tracks and additional workshops, covering various aspects of this field. In this publication, we present papers from the conference's Experience Track, the Policy Track, the Business Track, the International Track, and the Workshops.

This volume contains the written texts of the papers presented at a Symposium on Buckling of Structures held at Harvard University in June 1974. This symposium, one of several on various topics sponsored annually by the International Union of Theoretical and Applied Mechanics (IUTAM), was organized by a Scientific Committee consisting of B. Budiansky (Chairman), A. H. Chilver, W. T. Koiter, and A. S. Vol'mir. Participation was by invitation of the Scientific Committee, and specific lecturers were invited to speak in the areas of experimental research, buckling and post-buckling calculations, post-buckling mode interaction, plasticity and creep effects, dynamic buckling, stochastic problems, and design. A total of 29 lectures were delivered, including a general opening lecture by Professor Koiter, and there were 93 registered participants from 16 different countries. Financial support for the symposium was provided by IUTAM, in the form of partial travel support for a number of participants, and also by the National Science Foundation, the National Aeronautics and Space Administration, and the Air Force Office of Scientific Research, for additional travel support and administrative expenses. Meeting facilities and services were efficiently provided by the Science Center of Harvard University, and administrative support was generously provided by the Division of Engineering and Applied Physics of Harvard University. The scientific chairman enjoyed the invaluable assistance of his colleagues Professors J. W. Hutchinson and J. L.

Aerobic Granular Sludge has recently received growing attention by researchers and technology developers, worldwide. Laboratory studies and preliminary field tests led to the conclusion that granular activated sludge can be readily established and profitably used in activated sludge plants, provided 'correct' process conditions are chosen. But what makes process conditions 'correct'? And what makes granules different from activated sludge flocs? Answers to these questions are offered in Aerobic Granular Sludge. Major topics covered in this book include: Reasons and mechanism of aerobic granule formation Structure of the microbial population of aerobic granules Role, composition and physical properties of EPS Diffuse limitation and microbial activity within granules Physio-chemical characteristics Operation and application of granule reactors Scale-up aspects of granular sludge reactors, and case studies Aerobic Granular Sludge provides up-to-date information about a rapidly emerging new technology of biological treatment.

Negative-feedback amplifiers

Designing and Visioning in Governance Rescaling

Adaptive Strategies for Water Heritage

Electrical Machines, Drives, and Power Systems

Control Engineering

Drinking Water: Principles And Practices

In the twenty-first century, everyone can benefit from being able to think mathematically. This is not the same as "doing math." The latter usually involves the application of formulas, procedures, and symbolic manipulations; mathematical thinking is a powerful way of thinking about things in the world -- logically, analytically, quantitatively, and with precision. It is not a natural way of thinking, but it can be learned. Mathematicians, scientists, and engineers need to "do math," and it takes many years of college-level education to learn all that is required. Mathematical thinking is valuable to everyone, and can be mastered in about six weeks by anyone who has completed high school mathematics. Mathematical thinking does not have to be about mathematics at all, but parts of mathematics provide the ideal target domain to learn how to think that way, and that is the approach taken by this short but valuable book. The book is written primarily for first and second year students of science, technology, engineering, and mathematics (STEM) at colleges and universities, and for high school students intending to study a STEM subject at university. Many students encounter difficulty going from high school math to college-level mathematics. Even if they did well at math in school, most are knocked off

course for a while by the shift in emphasis, from the K-12 focus on mastering procedures to the "mathematical thinking" characteristic of much university mathematics. Though the majority survive the transition, many do not. To help them make the shift, colleges and universities often have a "transition course." This book could serve as a textbook or a supplementary source for such a course. Because of the widespread applicability of mathematical thinking, however, the book has been kept short and written in an engaging style, to make it accessible to anyone who seeks to extend and improve their analytic thinking skills. Going beyond a basic grasp of analytic thinking that everyone can benefit from, the STEM student who truly masters mathematical thinking will find that college-level mathematics goes from being confusing, frustrating, and at times seemingly impossible, to making sense and being hard but doable. Dr. Keith Devlin is a professional mathematician at Stanford University and the author of 31 previous books and over 80 research papers. His books have earned him many awards, including the Pythagoras Prize, the Carl Sagan Award, and the Joint Policy Board for Mathematics Communications Award. He is known to millions of NPR listeners as "the Math Guy" on Weekend Edition with Scott Simon. He writes a popular monthly blog "Devlin's Angle" for the Mathematical Association of America, another blog under the name "profkeithdevlin", and also blogs on various topics for the Huffington Post.

Build real-world Artificial Intelligence applications with Python to intelligently interact with the world around you About This Book Step into the amazing world of intelligent apps using this comprehensive guide Enter the world of Artificial Intelligence, explore it, and create your own applications Work through simple yet insightful examples that will get you up and running with Artificial Intelligence in no time Who This Book Is For This book is for Python developers who want to build real-world Artificial Intelligence applications. This book is friendly to Python beginners, but being familiar with Python would be useful to play around with the code. It will also be useful for experienced Python programmers who are looking to use Artificial Intelligence techniques in their existing technology stacks. What You Will Learn Realize different classification and regression techniques Understand the concept of clustering and how to use it to automatically segment data See how to build an intelligent recommender system Understand logic programming and how to use it Build automatic speech recognition systems Understand the basics of heuristic search and genetic programming Develop games using Artificial Intelligence Learn how reinforcement learning works Discover how to build intelligent applications centered on images, text, and time series data See how to use deep learning algorithms and build applications based on it In Detail Artificial Intelligence is becoming increasingly relevant in the modern world where everything is driven by technology and data. It is used extensively across many fields such as search engines, image recognition, robotics, finance, and so on. We will explore various real-world scenarios in this book and you'll learn about various algorithms that can be used to build Artificial Intelligence applications. During the course of this book, you will find out how to make informed decisions about what algorithms to use in a given context. Starting from the basics of Artificial Intelligence, you will learn how to develop various building blocks using different data mining techniques. You will see how to implement different algorithms to get the best possible results, and will understand how to apply them to real-world scenarios. If you want to add an intelligence layer to any application that's based on images, text, stock market, or some other form of data, this exciting book on Artificial Intelligence will definitely be your guide! Style and approach This highly practical book will show you how to implement Artificial Intelligence. The book provides multiple examples enabling you to create smart applications to meet the needs of your organization. In every chapter, we explain an algorithm, implement it, and then build a smart application.

This Special Issue covers symmetry and asymmetry phenomena occurring in real-life problems. We invited authors to submit their theoretical or experimental research presenting engineering and economic problem solution models dealing with the symmetry or asymmetry of different types of information. The issue gained interest in the research community and received many submissions. After rigorous scientific evaluation by editors and reviewers, nine papers were accepted and published. The authors proposed different solution models as integrated tools to find a balance between the components of sustainable global development, i.e., to find a symmetry axis concerning goals, risks, and constraints to cope with the complicated problems. We hope that a summary of the Special Issue as provided in this editorial will encourage a detailed analysis of the papers.

A comprehensive look at the promise and potential of online learning In our digital age, students have dramatically new learning needs and must be prepared for the idea economy of the future. In *Getting Smart*, well-known global education expert Tom Vander Ark examines the facets of educational innovation in the United States and abroad. Vander Ark makes a convincing case for a blend of online and onsite learning, shares inspiring stories of schools and programs that effectively offer "personal digital learning" opportunities, and discusses what we need to do to remake our schools into "smart schools." Examines the innovation-driven world, discusses how to combine online and onsite learning, and reviews "smart tools" for learning Investigates the lives of learning professionals, outlines the new employment bargain, examines online universities and "smart schools" Makes the case for smart capital, advocates for policies that create better learning, studies smart cultures

Artificial Intelligence with Python

Advanced Solid State Physics

Choice, Voice and Liveability in Residential Places

Delft Design Guide

An Introductory Course to Aeronautical Engineering

Design and Analysis of Composite Structures

Education for all is a bold, audacious statement. But that is the very goal of open education. Can you imagine a world where access to education materials is free? Where teachers and learners have the right to reuse, revise, remix, localize and translate those materials? Where copies of textbooks and course materials can be retained without cost? Can you imagine a world where teachers and learners co-create education together? A world where learners engage in assignments that generate global public goods benefiting everyone? You may say this isn't possible, but open educators around the world have been doing this for years. Building on the work of luminaries such as those featured in this book, open education has grown into a global movement transforming education. Each year, Open Education Global opens up nominations for awards to the entire global open education community. As part of the 10th anniversary of these awards, OEGlobal is publishing this *Education For All* book, collecting all ten years of award winners into a

single volume. This book is a celebration of their achievements.

Kjelstrup, Bedeaux, Johannessen, and Gross describe what non-equilibrium thermodynamics is in a simple and practical way and how it can add to engineering design. They explain how to describe proper equations of transport that are more precise than those used so far, and how to use them to understand the waste of energy resources in central process units in the industry. The authors introduce the entropy balance as an additional equation to use in engineering; to create consistent thermodynamic models, and to systematically minimize energy losses that are connected with the transport of heat, mass, charge and momentum. Non-equilibrium Thermodynamics for Engineers teaches the essence of non-equilibrium thermodynamics and its applications at a level comprehensible to engineering students, practitioner engineers, and scientists working on industrial problems. The book may be used as a textbook in basic engineering curricula or graduate courses.

Summary: "Backcasting: looking back from a desirable future. Since the 1990s sustainable futures have been explored in backcasting experiments, numerous stakeholders have been involved and first steps have been planned in line with the envisioned sustainable futures. But what is the impact of these so-called backcasting experiments ten years later? Backcasting for a Sustainable Future: The impact after 10 years is the first book that systematically investigates the follow-up and spin-off of backcasting experiments seven to ten years after completion. It presents three case studies about (1) Novel Protein Foods and meat alternatives; (2) Sustainable Households and Nutrition; and (3) Multiple Sustainable Land-use in rural areas. The cases show that participatory backcasting may, but does not automatically lead to substantial follow-up and spinoff. Using innovation and learning theories the factors that affect the emergence of follow-up and new networks are identified and discussed. This book will be of great value to all those who work on sustainable futures and system innovations, such as researchers in system innovations, sustainability and social change, as well as policy-makers, transition experts and backcasting professionals."--Publisher description.

This unique volume provides a comprehensive overview of all the major aspects of modern drinking water systems in the western European context. It not only covers the theoretical principles, but also the historical background and practical aspects of design and operation, legislation, planning and finance of drinking water supply in its social and economic context. The principles and practices are illustrated using experiences from The Netherlands. The Dutch drinking water supply is well known for its multiple barrier systems and high technical standards. The Dutch drinking water is of high quality and does not contain chlorine, and the Dutch therefore readily drink tap water and do not see the need to buy bottled water or in-house filters, with their drawbacks on national economics, public health and the environment. This illustrative overview can be used as a reference for other countries and regions.

Topology in Condensed Matter

Policy Analysis of Multi-Actor Systems

Introduction to Mechatronic Design

Fundamentals of Aerospace Engineering (2nd Edition)

Getting Smart

This book reports new results in condensed matter physics for which topological methods and ideas are important. It considers, on the one hand, recently discovered systems such as carbon nanocrystals and, on the other hand, new topological methods used to describe more traditional systems such as the Fermi surfaces of normal metals, liquid crystals and quasicrystals. The authors of the book are renowned specialists in their fields and present the results of ongoing research, some of it obtained only very recently and not yet published in monograph form.

Introduction to Flight McGraw-Hill College

Giant vesicles are widely used as a model membrane system, both for basic biological systems and for their promising applications in the development of smart materials and cell mimetics, as well as in driving new technologies in synthetic biology and for the cosmetics and pharmaceutical industry. The reader is guided to use giant vesicles, from the formation of simple membrane platforms to advanced membrane and cell system models. It also includes fundamentals for understanding lipid or polymer membrane structure, properties and behavior. Every chapter includes ideas for further applications and discussions on the implications of the observed phenomena towards understanding membrane-related processes. The Giant Vesicle Book is meant to be a road companion, a trusted guide for those making their first steps in this field as well as a source of information required by experts. Key Features • A complete summary of the field, covering fundamental concepts, practical methods, core theory, and the most promising applications • A start-up package of theoretical and experimental information for newcomers in the field • Extensive protocols for establishing the required preparations and assays • Tips and instructions for carefully performing and interpreting measurements with giant vesicles or for observing them, including pitfalls • Approaches developed for investigating giant vesicles as well as brief overviews of previous studies implementing the described techniques • Handy tables with data and structures for ready reference

Significant advances have been made in the field since the previous classic texts were written. This text brings the available knowledge up to date. * Enables the reader to use a wide variety of nonlinear system identification techniques. * Offers a thorough treatment of the underlying theory. * Provides a MATLAB toolbox containing implementation of the latest identification methods together with an extensive set of problems using realistic data sets.

Proceedings of the International Conference on Transformations in Engineering Education

ICTIEE 2014

With Applications to Aerospace Structures

The Leading World's Most Innovative Universities

Solar Energy

Introduction to Mathematical Thinking

This comprehensive volume presents a wide spectrum of information about the design, analysis and manufacturing of aerospace structures and materials. Readers will find an interesting compilation of reviews covering several topics such as structural dynamics and impact simulation, acoustic and vibration testing and analysis, fatigue analysis and life optimization, reversing design methodology, non-destructive evaluation, remotely piloted helicopters, surface enhancement of aerospace alloys, manufacturing of metal matrix composites, applications of carbon nanotubes in aircraft material design, carbon fiber reinforcements, variable stiffness composites, aircraft material selection, and much more. This volume is a key reference for graduates undertaking advanced courses in materials science and aeronautical engineering as well

as researchers and professional engineers seeking to increase their understanding of aircraft material selection and design. Experts discuss the potential for open education tools, resources, and knowledge to transform the economics and ecology of education. Policy analysts love solving complex problems. Their favorite problems are not just technically complex but also characterized by the presence of many different social actors that hold conflicting interests, objectives, and perceptions and act strategically to get the best out of a problem situation. This book offers guidance for policy analysts who want to assess if and how their analysis could be of help, based on the premise that problem formulation is the cornerstone in addressing complex problems. This book positions policy analysis within the theories on processes of policy making, and focuses on methods and techniques for structuring complex problems. The book takes a systems perspective as its basis, complemented by techniques for analyzing multi-actor systems, and for dealing with an uncertain future. Analytical results are then interpreted and used for problem formulation. In the last part of the book, the resulting problem formulation is used to diagnose meaningful follow-up activities, including potential in-depth policy analysis research. This book is firmly embedded in problem structuring theory, but also shows the tricks of the trade, the assumptions underlying practice, the choices that need to be made, and the dilemmas encountered by the analyst. The authors are involved in teaching problem structuring methods and policy analysis at the Faculty of Technology, Policy and Management of Delft University of Technology. Their interdisciplinary approach to problem formulation reflects their multi-disciplinary backgrounds, which range from physics, informatics and land-use planning to public administration and the philosophy of technology.

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Microgrids are poised to play a big role in the electricity ecosystem of the future—with decarbonization, digitalization, decentralization, and non-wires solutions being key attributes. This handbook serves as a guide to evaluate the feasibility of microgrid systems in enhancing power supply quality and connectivity. It includes information about on-grid microgrids for urban and industrial applications, prevailing business models, and emerging trends that could shape the future of this sector.

Solution Models Based on Symmetric and Asymmetric Information

In celebration of Open Education Global's 10th Anniversary of Open Education Awards for Excellence

Experimental Methods in Wastewater Treatment

Introduction to Flight

Education For All: Ten years of open education luminaries from around the world

Opening Up Education

This text provides a comprehensive and concise treatment of the topic of traffic flow theory and includes several topics relevant to today's highway transportation system. It provides the fundamental principles of traffic flow theory as well as applications of those principles for evaluating specific types of facilities (freeways, intersections, etc.). Newer concepts of Intelligent transportation systems (ITS) and their potential impact on traffic flow are discussed. State-of-the-art in traffic flow research and microscopic traffic analysis and traffic simulation have significantly advanced and are also discussed in this text. Real world examples and useful problem sets complement each chapter. This textbook is meant for use in advanced undergraduate/graduate level courses in traffic flow theory with prerequisites including two semesters of calculus, statistics, and an introductory course in transportation. The text would also be of interest to transportation professionals as a refresher in traffic flow theory, or as a reference. Students and engineers of diverse backgrounds will find this text accessible and applicable to today's traffic issues.

The Second Edition of this book includes a revision and an extension of its former version. The book is

divided into three parts, namely: Introduction, The Aircraft, and Air Transportation, Airports, and Air Navigation. It also incorporates an appendix with somehow advanced mathematics and computer based exercises. The first part is divided in two chapters in which the student must achieve to understand the basic elements of atmospheric flight (ISA and planetary references) and the technology that apply to the aerospace sector, in particular with a specific comprehension of the elements of an aircraft. The second part focuses on the aircraft and it is divided in five chapters that introduce the student to aircraft aerodynamics (fluid mechanics, airfoils, wings, high-lift devices), aircraft materials and structures, aircraft propulsion, aircraft instruments and systems, and atmospheric flight mechanics (performances and stability and control). The third part is devoted to understand the global air transport system (covering both regulatory and economical frameworks), the airports, and the global air navigation system (its history, current status, and future development). The theoretical contents are illustrated with figures and complemented with some problems/exercises. The course is complemented by a practical approach. Students should be able to apply theoretical knowledge to solve practical cases using academic (but also industrial) software, such as Python and XFLR5. The course also includes a series of assignments to be completed individually or in groups. These tasks comprise an oral presentation, technical reports, scientific papers, problems, etc. The course is supplemented by scientific and industrial seminars, recommended readings, and a visit to an institution or industry related to the study and of interest to the students. All this documentation is not explicitly in the book but can be accessed online at the book's website www.aerospaceengineering.es. The slides of the course are also available at the book's website: <http://www.aerospaceengineering.es> Fundamentals of Aerospace Engineering is licensed under a Creative Commons Attribution-Share Alike (CC BY-SA) 3.0 License, and it is offered in open access both in "pdf" format. The document can be accessed and downloaded at the book's website. This licensing is aligned with a philosophy of sharing and spreading knowledge. Writing and revising over and over this book has been an exhausting, very time consuming activity. To acknowledge author's effort, a donation platform has been activated at the book's website. The term 'transport phenomena' describes the fundamental processes of momentum, energy, and mass transfer. This text provides a thorough discussion of transport phenomena, laying the foundation for understanding a wide variety of operations used by chemical engineers. The book is arranged in three parallel parts covering the major topics of momentum, energy, and mass transfer. Each part begins with the theory, followed by illustrations of the way the theory can be used to obtain fairly complete solutions, and concludes with the four most common types of averaging used to obtain approximate solutions. A broad range of technologically important examples, as well as numerous exercises, are provided throughout the text. Based on the author's extensive teaching experience, a suggested lecture outline is also included. This book is intended for first-year graduate engineering students; it will be an equally useful reference for researchers in this field.

an overview of product design approaches and methods used at the faculty of Industrial Design Engineering at the TU Delft.

How Digital Learning is Changing the World

Introduction to Aerodynamics

Aerospace Structures and Materials

The Collective Advancement of Education Through Open Technology, Open Content, and Open Knowledge

Past, Present and Future

Symposium Cambridge/USA, June 17-21, 1974

Analog design is one of the more difficult aspects of electrical engineering. The main reason is the apparently vague decisions an experienced designer makes in optimizing his circuit. To enable fresh designers, like students electrical engineering, to become acquainted with analog circuit design, structuring the analog design process is of utmost importance. Structured Electronic Design: Negative-Feedback Amplifiers presents a design methodology for negative-feedback amplifiers. The design methodology enables to synthesize a topology and to, at the same time, optimize the performance of that topology. Key issues in the design methodology are orthogonalization, hierarchy and simple models. Orthogonalization enables the separate optimization of the three fundamental quality aspects: noise, distortion and bandwidth. Hierarchy ensures that the right decisions are made at the correct level of abstraction. The use of simple models, results in simple calculations yielding maximum-performance indicators that can be used to reject wrong circuits relatively fast. The presented design methodology divides the design of negative-feedback amplifiers in six independent steps. In the first two steps, the feedback network is designed. During those design steps, the active part is assumed to be a nullor, i.e. the performance with respect to noise, distortion and bandwidth is still ideal. In the subsequent four steps, an implementation for the active part is synthesized. During those four steps the topology of the active part is synthesized such that optimum performance is obtained. Firstly, the input stage is designed with respect to noise performance. Secondly, the output stage is designed with respect to clipping distortion. Thirdly, the bandwidth performance is designed, which may require the addition of an additional amplifying stage. Finally, the biasing circuitry for biasing the amplifying stages is designed. By dividing the design in independent design steps, the total global optimization is reduced to several local optimizations. By the specific sequence of the design steps, it is assured that the local optimizations yield a circuit that is close to the global optimum. On top of that, because of the separate dedicated optimizations, the resource use, like power, is tracked clearly. Structured Electronic Design: Negative-Feedback Amplifiers presents in two chapters the background and an overview of the design methodology. Whereafter, in six chapters the separate design steps are treated with great detail. Each chapter comprises several exercises. An additional chapter is dedicated to how to design current sources and voltage source, which are required for the biasing. The final chapter in the book is dedicated to a thoroughly described design example, showing clearly the benefits of the design

methodology. In short, this book is valuable for M.Sc.-curriculum Electrical Engineering students, and of course, for researchers and designers who want to structure their knowledge about analog design further.

Fatigue of structures and materials covers a wide scope of different topics. The purpose of the present book is to explain these topics, to indicate how they can be analyzed, and how this can contribute to the designing of fatigue resistant structures and to prevent structural fatigue problems in service. Chapter 1 gives a general survey of the topic with brief comments on the significance of the aspects involved. This serves as a kind of a program for the following chapters. The central issues in this book are predictions of fatigue properties and designing against fatigue. These objectives cannot be realized without a physical and mechanical understanding of all relevant conditions. In Chapter 2 the book starts with basic concepts of what happens in the material of a structure under cyclic loads. It illustrates the large number of variables which can affect fatigue properties and it provides the essential background knowledge for subsequent chapters. Different subjects are presented in the following main parts: • Basic chapters on fatigue properties and predictions (Chapters 2–8) • Load spectra and fatigue under variable-amplitude loading (Chapters 9–11) • Fatigue tests and scatter (Chapters 12 and 13) • Special fatigue conditions (Chapters 14–17) • Fatigue of joints and structures (Chapters 18–20) • Fiber-metal laminates (Chapter 21) Each chapter presents a discussion of a specific subject.

This comprehensive textbook takes you through everything you need to know about solar energy from the physics of photovoltaic (PV) cells through to the design of PV systems for real-life applications. Solar Energy is an invaluable reference for researchers, industrial engineers and designers working in solar energy generation. The book is also ideal for university and third-level physics or engineering courses on solar photovoltaics, with exercises to check students' understanding and reinforce learning. It is the perfect companion to the Massive Open Online Course (MOOC) on Solar Energy (DelftX, ET.3034TU) presented by co-author Arno Smets. The course is available in English on the nonprofit open source edX.org platform, and in Arabic on edraak.org. Over 100,000 students have already registered for these MOOCs.

This book offers fundamental information on the analysis and synthesis of continuous and sampled data control systems. It includes all the required preliminary materials (from mathematics, signals and systems) that are needed in order to understand control theory, so readers do not have to turn to other textbooks. Sampled data systems have recently gained increasing importance, as they provide the basis for the analysis and design of computer-controlled systems. Though the book mainly focuses on linear systems, input/output approaches and state space descriptions are also provided. Control structures such as feedback, feed forward, internal model control, state feedback control, and the Youla parameterization approach are discussed, while a closing section outlines advanced areas of control theory. Though the book also contains selected examples, a related exercise book provides Matlab/Simulink exercises for all topics discussed in the textbook, helping readers to understand the theory and apply it in order to solve control problems. Thanks to this combination, readers will gain a basic grasp of systems and control, and be able to analyze and design continuous and discrete control systems.

Design Strategies and Methods

Structured Electronic Design

Handbook on Microgrids for Power Quality and Connectivity

Backcasting for a Sustainable Future

The Impact After 10 Years

Making Room for People

This Open Access book, building on research initiated by scholars from the Leiden-Delft-Erasmus Centre for Global Heritage and Development (CHGD) and ICOMOS Netherlands, presents multidisciplinary research that connects water to heritage. Through twenty-one chapters it explores landscapes, cities, engineering structures and buildings from around the world. It describes how people have actively shaped the course, form and function of water for human settlement and the development of civilizations, establishing socio-economic structures, policies and cultures; a rich world of narratives, laws and practices; and an extensive network of infrastructure, buildings and urban form. The book is organized in five thematic sections that link practices of the past to the design of the present and visions of the future: part I discusses drinking water management; part II addresses water use in agriculture; part III explores water management for land reclamation and defense; part IV examines river and coastal planning; and part V focuses on port cities and waterfront regeneration. Today, the many complex systems of the past are necessarily the basis for new systems that both preserve the past and manage water today: policy makers and designers can work together to recognize and build on the traditional knowledge and skills that old structure embody. This book argues that there is a need for a common agenda and an integrated policy that addresses the preservation, transformation and adaptive reuse of historic water-related structures. Throughout, it imagines how such efforts will help us develop sustainable futures for cities, landscapes and bodies of water.

Solid state physics continues to be the most rapidly growing subdiscipline in physics. As a result, entering graduate students wishing to pursue research in this field face the daunting task of not only mastering the old topics but also gaining competence in the problems of current interest, such as the fractional quantum Hall effect, strongly correlated electron systems, and quantum phase transitions. This book is written to serve the needs of such students. I have attempted in this book to present some of the standard topics in a way that makes it possible to move smoothly to current material. Hence, all the interesting topics are not presented at the end of the book. For example, immediately after the first 50 pages, Anderson's analysis of local magnetic moments is presented as an application of Hartree-Fock theory; this affords a discussion of the relationship with the Kondo model and how scaling ideas can be used to uncloak low-energy physics. As the key problems of current interest in solid state involve some aspects of electron-electron interactions or disorder or both, I have focused on the archetypal problems in which such physics is central. However, only those problems in which there is a consensus view are discussed extensively. In addition, I have placed the emphasis on physics rather than on techniques. Consequently, I focus on a clear presentation of the phenomenology along with a pedagogical derivation of the relevant equations. A key goal of the detailed derivations is to make it possible for the students who have read this book to immediately comprehend research papers on related topics. A key omission in this book is magnetism beyond the Stoner criterion and local magnetic moments. This omission has arisen primarily because the topic is adequately treated in the book by Assa Auerbach.

Fatigue of Structures and Materials