

## Environmental Engineering By N N Basak

Novel Nanomaterials for Biomedical, Environmental, and Energy Applications is a comprehensive study on the cutting-edge progress in the synthesis and characterization of novel nanomaterials and their subsequent advances and uses in biomedical, environmental and energy applications. Covering novel concepts and key points of interest, this book explores the frontier applications of nanomaterials. Chapters discuss the overall progress of novel nanomaterial applications in the biomedical, environmental and energy fields, introduce the synthesis, characterization, properties and applications of novel nanomaterials, discuss biomedical applications, and cover the electrocatalytic and photothermal effects of novel nanomaterials for efficient energy applications. The book will be invaluable to academic researchers and biomedical clinicians working with nanomaterials. Offers comprehensive details on novel and emerging nanomaterials Presents a comprehensive view of new and emerging tactics for the synthesis of efficient nanomaterials Describes and monitors the functions of applications of new and emerging nanomaterials in the biomedical, environmental and energy fields

Optimizing Thermal, Chemical and Environmental Systems treats the evaluation of power or energy limits for processes that arise in various thermal, chemical and environmental engineering systems (heat and mass exchangers, power converters, recovery units, solar collectors, mixture separators, chemical reactors, catalyst regenerators, etc.). The book is an indispensable source for researchers and students, providing the necessary information on what has been achieved to date in the field of process optimization, new research problems, and what kind of further studies should be developed within quite specialized optimizations. Summarizes recent achievements of advanced optimization techniques Links exergy definitions in reversible systems with classical problems of extremum work Includes practical problems and illustrative examples to clarify applications Provides a unified description of classical and work-assisted heat and mass exchangers Written by a first-class expert in the field of advanced methods in thermodynamics

This contains selected and peer-reviewed papers from the 4th Annual International Conference on Material Science and Environmental Engineering (MSEE), December 16-18 2016, in Chengdu, China. Interactions of building materials, biomaterials, energy materials and nanomaterials with surrounding environment are discussed. With abundant case studies, it is of interests to material scientists and environmental engineers.

A panel of respected air pollution control educators and practicing professionals critically survey the both principles and practices underlying control processes, and illustrate these with a host of detailed design examples for practicing engineers. The authors discuss the performance, potential, and limitations of the major control processes-including fabric filtration, cyclones, electrostatic precipitation, wet and dry scrubbing, and condensation-as a basis for intelligent planning of abatement systems,. Additional chapters critically examine flare processes, thermal oxidation, catalytic oxidation, gas-phase activated carbon adsorption, and gas-phase biofiltration. The contributors detail the Best Available Technologies (BAT) for air pollution control and provide cost data, examples, theoretical explanations, and engineering methods for the design, installation, and operation of air pollution process equipment. Methods of practical design calculation are illustrated by numerous numerical calculations.

Because of the ubiquitous nature of environmental problems, a variety of scientific disciplines are involved in the development of environmental solutions. The Handbook of Chemical and Environmental Engineering Calculations provides approximately 600 real-world, practical solutions to environmental problems that involve chemical engineering, enabling engineers and applied scientists to meet the professional challenges they face day-to-day. The scientific and mathematical crossover between chemical and environmental engineering is the key to solving a host of environmental problems. Many problems included in the Handbook are intended to demonstrate this crossover, as well as the integration of engineering with current regulations and environmental media such as air, soil, and water. Solutions to the problems are presented in a programmed instructional format. Each problem contains a title, problem statement, data, and solution, with the more difficult problems located near the end of each problem set. The Handbook offers material not only to individuals with limited technical background but also to those with extensive industrial experience. Chapter titles include: Chemical Engineering Fundamentals Chemical Engineering Principles Air Pollution Control Equipment Solid Waste Water Quality and Wastewater Treatment Pollution Prevention Health, Safety, and Accident Management Ideal for students at the graduate and undergraduate levels, the Handbook of Chemical and Environmental Engineering Calculations is also a comprehensive reference for all plant and environmental engineers, particularly those who work with air, drinking water, wastewater, hazardous materials, and solid waste.

This Revised Edition Of The Book On Environmental Pollution Control Engineering Features A Systematic And Thorough Treatment Of The Principles Of The Origin Of Air, Water And Land Pollutants, Their Effect On The Environment And The Methods Available To Control Them. The Demographic And Environmental Trends, Energy Consumption Patterns And Their Impact On The Environment Are Clearly Discussed. Application Of The Physical, And Chemical Engineering Concepts To The Design Of Pollution Control Equipment Is Emphasized. Due Importance Is Given To Modelling, Quality Monitoring And Control Of Specific Major Pollutants. A Separate Chapter On The Management Of Hazardous Wastes Is Added. Information Pertaining To Indian Conditions Is Given Wherever Possible To Help The Reader Gain An Insight Into India Sown Pollution Problems. This Book Is Mainly Intended As A Textbook For An Integrated One-Semester Course For Senior Level Undergraduate Or First Year Post-Graduate Engineering Students And Can Also Serve As A Reference Book To Practising Engineers And Decision Makers Concerned With Environmental Pollution Control. Designed for a first-course in environmental engineering for undergraduate engineering and postgraduate science students, the book deals with environmental pollution and its control methodologies. It explains the basic environmental technology - environmental sanitation, water supply, waste management, air pollution control and other related issues -

and presents a logical and systematic treatment of topics. The book, an outgrowth of author's long experience in teaching the postgraduate science and engineering students, is presented in a student-oriented approach. It is interspersed with solved examples and illustrations to reinforce many of the concepts discussed and apprise the readers of the current practices in areas of water processing, water distribution, collection and treatment of domestic sewage and industrial waste water, and control of air pollution. It emphasizes fundamental concepts and basic applications of environmental technology for management of environmental problems. Besides students, the book will be useful to the academia of environmental sciences, civil/environmental engineering as well as to environmentalists and administrators working in the field of pollution control.

Two critical questions arise when one is confronted with a new problem that involves the collection and analysis of data. How will the use of statistics help solve this problem? Which techniques should be used? *Statistics for Environmental Engineers, Second Edition* helps environmental science and engineering students answer these questions when the goal is to understand and design systems for environmental protection. The second edition of this bestseller is a solutions-oriented text that encourages students to view statistics as a problem-solving tool. Written in an easy-to-understand style, *Statistics for Environmental Engineers, Second Edition* consists of 54 short, "stand-alone" chapters. All chapters address a particular environmental problem or statistical technique and are written in a manner that permits each chapter to be studied independently and in any order. Chapters are organized around specific case studies, beginning with brief discussions of the appropriate methodologies, followed by analysis of the case study examples, and ending with comments on the strengths and weaknesses of the approaches. New to this edition: Thirteen new chapters dealing with topics such as experimental design, sizing experiments, tolerance and prediction intervals, time-series modeling and forecasting, transfer function models, weighted least squares, laboratory quality assurance, and specialized control charts Exercises for classroom use or self-study in each chapter Improved graphics Revisions to all chapters Whether the topic is displaying data, t-tests, mechanistic model building, nonlinear least squares, confidence intervals, regression, or experimental design, the context is always familiar to environmental scientists and engineers. Case studies are drawn from censored data, detection limits, regulatory standards, treatment plant performance, sampling and measurement errors, hazardous waste, and much more. This revision of a classic text serves as an ideal textbook for students and a valuable reference for any environmental professional working with numbers.

The protection of clean water, air, and land for the habitation of humans and other organisms has become a pressing concern amid the intensification of industrial activities and the rapidly growing world population. The integration of environmental science with engineering principles has been introduced as a means of long-term sustainable development. *The Handbook of Research on Advancements in Environmental Engineering* creates awareness of the role engineering plays in protecting and improving the natural environment. Providing the latest empirical research findings, this book is an essential reference source for executives, educators, and other experts who seek to improve their project's environmental costs.

This book covers the syllabi of "Environmental Engineering" and "Public Health Engineering" of various Indian Universities. The book is recommended in AICTE model curriculum. The book has been divided in 3 part; namely; Water Supply Engineering; Sewage Engineering and Air Pollution Engineering. The book is useful for Degree as well as Diploma students and is also likely to be useful for practising engineers in this field

*Green Sustainable Process for Chemical and Environmental Engineering and Science: Solid State Synthetic Methods* cover recent advances made in the field of solid-state materials synthesis and its various applications. The book provides a brief introduction to the topic and the fundamental principles governing the various methods. Sustainable techniques and green processes development in solid-state chemistry are also highlighted. This book also provides a comprehensive literature on the industrial application using solid-state materials and solid-state devices. Overall, this book is intended to explore green solid-state techniques, eco-friendly materials involved in organic synthesis and real-time applications. Provides a broad overview of solid-state chemistry Outlines an eco-friendly solid-state synthesis of modern nanomaterials, organometallic, coordination compounds and pure organic Gives a detailed account of solid-state chemistry, fundamentals, concepts, techniques and applications Deliberates cutting-edge recent advances in industrial technologies involved in energy, environmental, medicinal and organic chemistry fields

This book comprehensively reviews mindfulness-based interventions for specific areas of functioning in children and adolescents, with refreshing insights and perspectives. Based on a solid foundation of research and practice, it presents the nature of mindfulness, examines the psychological processes that may underlie mindfulness, and explores how to assess it. Mindfulness is about how we can be attentive to and present for everything that happens in our daily lives. This book draws upon current research in the field in order to explore topics such as the fundamentals of teaching mindfulness to children and adolescents; assessment of mindfulness in this population; use of mindfulness in educational settings; and clinical applications in mental health, including substance abuse, hyperactivity, and intellectual and developmental disabilities. With contributions from internationally-renowned clinicians and scholars, this book provides a balanced account of the strengths and weaknesses of current research, and how mindfulness-based programs can be used to enhance wellbeing and reduce suffering. This book will be of great interest for academics, scholars and post graduate students involved in the study of the mental health of children and adolescents. It will also appeal to psychologists, psychiatrist, nurses, social workers, rehabilitation therapists and others, such as school counsellors, who provide clinical care to children and adolescents.

Expanding a port, deepening a navigation channel or creating new land for development, introduces changes to our physical, social, economic and political environment. Changes may result from events during the construction process, or relate to the nature of the completed structure. Changes can be positive or negative, short-term or long-term, and may affect the immediate vicinity of the project or a larger geographical area. Predicting and assessing all possible effects of a planned dredging activity in a scientifically-sound and reliable manner is essential, so that appropriate control measures can be taken to avoid or mitigate unwelcome impacts. This book provides guidance for a complete holistic environmental evaluation procedure and for the design and implementation of environmental control measures. The book is of particular interest to engineers, government agencies and port authorities, as well as civil engineering consultants and contractors involved in planning and designing dredging, maritime infrastructure and fluvial projects.

This book examines the potential applications of nanoscience and nanotechnology to promote eco-friendly processes and techniques for energy and environment sustainability. Covering various aspects of both the synthesis and applications of nanoparticles and nanofluids for energy and environmental engineering, its goal is to promote eco-friendly processes and techniques. Accordingly, the book elaborates on the development of reliable, economical, eco-friendly processes through advanced nanoscience and technological research and innovations. Gathering contributions by researchers actively engaged in various domains of nanoscience and technology, it addresses topics such as

nanoparticle synthesis (both top-down and bottom-up approaches); applications of nanomaterials, nanosensors and plasma discharge in pollution control; environmental monitoring; agriculture; energy recovery; production enhancement; energy conservation and storage; surface modification of materials for energy storage; fuel cells; pollution mitigation; and CO<sub>2</sub> capture and sequestration. Given its scope, the book will be of interest to academics and researchers whose work involves nanotechnology or nanomaterials, especially as applied to energy and/or environmental sustainability engineering. Graduate students in the same areas will also find it a valuable resource.

Advanced membranes—from fundamentals and membrane chemistry to manufacturing and applications A hands-on reference for practicing professionals, *Advanced Membrane Technology and Applications* covers the fundamental principles and theories of separation and purification by membranes, the important membrane processes and systems, and major industrial applications. It goes far beyond the basics to address the formulation and industrial manufacture of membranes and applications. This practical guide: Includes coverage of all the major types of membranes: ultrafiltration; microfiltration; nanofiltration; reverse osmosis (including the recent high-flux and low-pressure membranes and anti-fouling membranes); membranes for gas separations; and membranes for fuel cell uses Addresses six major topics: membranes and applications in water and wastewater; membranes for biotechnology and chemical/biomedical applications; gas separations; membrane contractors and reactors; environmental and energy applications; and membrane materials and characterization Includes discussions of important strategic issues and the future of membrane technology With chapters contributed by leading experts in their specific areas and a practical focus, this is the definitive reference for professionals in industrial manufacturing and separations and research and development; practitioners in the manufacture and applications of membranes; scientists in water treatment, pharmaceutical, food, and fuel cell processing industries; process engineers; and others. It is also an excellent resource for researchers in industry and academia and graduate students taking courses in separations and membranes and related fields.

The National Oceanic and Atmospheric Administration (NOAA) collects, manages, and disseminates a wide range of climate, weather, ecosystem and other environmental data that are used by scientists, engineers, resource managers, policy makers, and others in the United States and around the world. The increasing volume and diversity of NOAA's data holdings - which include everything from satellite images of clouds to the stomach contents of fish - and a large number of users present NOAA with substantial data management challenges. NOAA asked the National Research Council to help identify the observations, model output, and other environmental information that must be preserved in perpetuity and made readily accessible, as opposed to data with more limited storage lifetime and accessibility requirements. This report offers nine general principles for effective environmental data management, along with a number of more specific guidelines and examples that explain and illustrate how these principles could be applied at NOAA.

*Textbook of Environmental Chemistry* has been designed to provide fundamental knowledge of the principles related to environment and its chemistry so as to meet the challenging requirements of students as well as teachers of Environmental Sciences, Environmental Chemistry and Environmental Studies at graduate, postgraduate, polytechnic, and engineering levels at all Indian Universities. This book is also useful for the students and professors of general science. The book explores biological resources and their relationship with physical and chemical aspects of the environment. Due emphasis has been given to the regional as well as global environmental problems like water, air, soil and noise pollution, their types and sources, effects on the ecosystem. Key Features \* The book deals with principles and chemical reactions that govern the behaviour of water, air and soil environment. \* The book emphasizes on the origin of various pollutants and their control. \* New and current fields of environmental science - Green Chemistry, Environmental Biotechnology, Polymers for Environment. \* It covers environmental impact, planning and laws to help readers understand how policies and plans are formulated to protect our environment. \*

Environmental pollution abatement engineering and technology has been discussed in-depth

With global inequalities becoming more pronounced, ingredient costs climbing, and global warming a major political issue, food producers must now address environmental concerns, social responsibility and economic viability when designing their food processing techniques for the future. Sustainable food processing is all about finding new ways of meeting present needs without compromising future viability, given constantly changing economic and environmental conditions. This is not just a corporate social responsibility issue, but relates directly to efficiency, cost-saving and profitability, and so the food industry must increasingly embrace sustainable food processing in order to succeed. This book provides a comprehensive overview on both economic sustainability and environmental concerns relating to food processing. It promotes ways of increasing sustainability in all the major sectors of the food industry, and will establish itself as a standard reference book on sustainable food processing. It will be of great interest to academic and industrial professionals. Opening chapters cover the concept and principles of sustainable food processing, with reference to various food processing sectors (dairy, meat, seafood, grain, fruit and vegetables). Further chapters on brewing, cold chain, consumption and packaging provide a comprehensive guide to making these key processes more sustainable. Issues such as cleaning, sanitation, and carbon footprint are discussed, before dedicated chapters covering energy and water consumption in the food industry address economic sustainability. Environmental impact assessment and food processing, waste utilization, risk assessment, and regulatory and legislative issues are also addressed. Contributors include a combination of leading academic and industrial experts, to provide informed and industrially relevant perspectives on these topics. This inspiring book presents the true stories of 12 people from across North America who have done great things for the environment. Heroes include a teenage girl who figured out how to remove an industrial pollutant from the Ohio River, a Mexican superstar wrestler who works to protect turtles and whales, and a teenage boy from Rhode Island who helped his community and his state develop effective e-waste recycling programs. Plenty of photographs and illustrations bring each compelling story vividly to life.

This book discusses a broad range of statistical design and analysis methods that are particularly well suited to pollution data. It explains key statistical techniques in easy-to-comprehend terms and uses practical examples, exercises, and case studies to illustrate procedures. Dr. Gilbert begins by discussing a space-time framework for sampling pollutants. He then shows how to use statistical sample survey methods to estimate average and total amounts of pollutants in the environment, and how to determine the number of field samples and measurements to collect for this purpose. Then a broad range of statistical analysis methods are described and illustrated. These include: \* determining the number of samples needed to find hot spots \* analyzing pollution data that are lognormally distributed \* testing for trends over time or space \* estimating the magnitude of trends \* comparing pollution data from two or more populations New areas discussed in this sourcebook include statistical techniques for data that are correlated, reported as less than the measurement detection limit, or obtained from field-composited samples. Nonparametric statistical analysis methods are emphasized since parametric procedures are often not appropriate for pollution data. This book also provides an illustrated comprehensive computer code for nonparametric trend detection and estimation analyses as well as nineteen statistical tables to permit easy application of the discussed statistical techniques. In addition, many publications are cited that deal with the design of pollution studies and the statistical analysis of pollution data. This sourcebook will be a useful tool for

applied statisticians, ecologists, radioecologists, hydrologists, biologists, environmental engineers, and other professionals who deal with the collection, analysis, and interpretation of pollution in air, water, and soil.

Air pollution control can be approached from a number of different engineering disciplines environmental, chemical, civil, and mechanical. To that end, Noel de Nevers has written an engaging overview of the subject. While based on the fundamentals of chemical engineering, the treatment is accessible to readers with only one year of college chemistry. In addition to discussions of individual air pollutants and the theory and practice of air pollution control devices, de Nevers devotes about half the book to topics that influence device selection and design, such as atmospheric models and U.S. air pollution law. The generous number of end-of-chapter problems are designed to develop more complex thinking about the concepts presented and integrate them with readers' personal experience, increasing the likelihood of deeper understanding.

"This book covers a multitude of newly developed hardware and software technology advancements in urban and spatial planning and architecture, drawing on the most current research and studies of field practitioners who offer solutions and recommendations for further growth, specifically in urban and spatial developments"--

Soft Computing Techniques in Solid Waste and Wastewater Management is a thorough guide to computational solutions for researchers working in solid waste and wastewater management operations. This book covers in-depth analysis of process variables, their effects on overall efficiencies, and optimal conditions and procedures to improve performance using soft computing techniques. These topics coupled with the systematic analyses described will help readers understand various techniques that can be effectively used to achieve the highest performance. In-depth case studies along with discussions on applications of various soft-computing techniques help readers control waste processes and come up with short-term, mid-term and long-term strategies. Waste management is an increasingly important field due to rapidly increasing levels of waste production around the world. Numerous potential solutions for reducing waste production are underway, including applications of machine learning and computational studies on waste management processes. This book details the diverse approaches and techniques in these fields, providing a single source of information researchers and industry practitioners. It is ideal for academics, researchers and engineers in waste management, environmental science, environmental engineering and computing, with relation to environmental science and waste management. Provides a comprehensive reference on the implementation of soft computing techniques in waste management, drawing together current research and future implications. Includes detailed algorithms used, enabling authors to understand and appreciate potential applications. Presents relevant case studies in solid and wastewater management that show real-world applications of discussed technologies.

The book addresses the challenges of urban water security and adaptive management in Sub-Saharan Africa, exploring and interlinking novel concepts of ecosystem services, watershed investments, and boundary work. Specifically, the book's goals are to (i) present a conceptual framework for the urban water sector from an ecosystem services perspective, highlighting the specificities of the Sub-Saharan context; (ii) develop an operational approach to designing and assessing the impacts of watershed investments, based on ecosystem services and boundary work; and (iii) test the approach through a case study in Asmara, Eritrea, and discuss the findings and lessons learned that can be applied in other contexts. Through a fully worked out case study, from identification of water challenges and opportunities to spatially explicit modelling, the book offers a sound and accessible, coverage of issues and proposed solutions to better operationalize ecosystem services, watershed investments and boundary work, to promote adaptive management, and achieve water security in the context of rapidly developing cities in Sub-Saharan Africa. The book is an effective tool for capacity building of diverse stakeholders on the urban water sector, including water managers, local and national policy-makers as well as a suitable resource for both undergraduate and post-graduate courses in planning and geography.

This volume contains a collection of topical chapters that promote interdisciplinary approaches to biological systems, focusing on fundamental and relevant connections between chemistry and life. Included are studies and experiments as well as invited lectures and notes by prominent leaders on a wide variety of topics in biology and biochemistry. B

Considered the definitive text for the first course in chemistry for environmental engineers. This text has a two-fold purpose: 1) bring into focus those aspects of chemistry which are particularly valuable to environmental engineering practices, and 2) lay a groundwork of understanding in the area of specialized quantitative analysis, commonly referred to as "water and wastewater analysis."

Based on an International Workshop held in Arusha, Tanzania, this book presents state-of-the-art papers, real world applications, and innovative techniques for combating land degradation. It offers recommendations for effectively using weather and climate information for sustainable land management practices.

Utilizes both Computer- and Hand-Based Calculations... Modern practice in geomechanics is becoming increasingly reliant on computer-based software, much of which can be obtained through the Internet. In Geomechanics in Soil, Rock, and Environmental Engineering the application of these numerical techniques is examined not only for soil mechanics, but also for rock mechanics and environmental applications. ... For Use in Complex Analysis It deals with the modern analysis of shallow foundations, deep foundations, retaining structures, and excavation and tunneling. In recent years, the environment has become more and more important, and so it also deals with municipal and mining waste and solutions for the disposal and containment of the waste. Many fresh solutions to problems are presented to enable more accurate and advanced designs to be carried out. A Practical Reference for Industry Professionals, This Illuminating Book: Offers a broad range of coverage in soil mechanics, rock mechanics, and environmental engineering. Incorporates the author's more than 40 years of academic and practical design experience. Describes the latest applications that have emerged in the last ten years. Supplies references readily available online for further research. Geomechanics in Soil, Rock, and Environmental Engineering should appeal to students in their final undergraduate course in geomechanics or master's students, and should also serve as a useful reference to practitioners in the field of geomechanics, reflecting the author's background in both industry and academia.

For microbiology and environmental microbiology courses, this leading textbook builds on the academic success of the previous edition by including a comprehensive and up-to-date discussion of environmental microbiology as a discipline that has grown in scope and interest in recent years. From environmental science and microbial ecology to topics in molecular genetics, this edition relates environmental microbiology to the work of a variety of life science, ecology, and environmental science investigators. The authors and editors have taken the care to highlight links between environmental microbiology and topics important to our changing world such as bioterrorism and national security with sections on practical issues such as bioremediation, waterborne pathogens, microbial risk assessment, and environmental biotechnology. WHY ADOPT THIS EDITION? New chapters on: Urban Environmental Microbiology Bacterial Communities in Natural Ecosystems Global Change and Microbial Infectious Disease Microorganisms and Bioterrorism Extreme Environments (emphasizing the ecology of these environments) Aquatic Environments (now devoted to its own chapter- was combined with Extreme Environments) Updates to Methodologies: Nucleic Acid -Based Methods: microarrays, phyloarrays, real-time PCR, metagenomics, and comparative genomics

Physiological Methods: stable isotope fingerprinting and functional genomics and proteomics-based approaches Microscopic Techniques: FISH (fluorescent in situ hybridization) and atomic force microscopy Cultural Methods: new approaches to enhanced cultivation of environmental bacteria Environmental Sample Collection and Processing: added section on air sampling

The awareness of environment protection is a great achievement of humans; an expression of self-awareness. Even though the idea of living while protecting the environment is not new, it has never been so widely and deeply practiced by any nations in history like it is today. From the late 90s in the last century, the surprisingly fast dev

This book covers the latest in recycling and reuse research focused toward greater sustainability and includes chapters authored by the world's leading thinkers and practitioners in the field. Topics covered include recycling and reuse, solid waste management, renewable energy, environmental studies, and wastewater management. This text contains environmental issues with an experimental focus, making this a useful resource to students, researchers, and professionals working in solid waste management, energy and water sustainability issues within the geoscience, engineering, and chemistry fields.

This book contains papers presented in the 6th International Conference on Civil, Offshore & Environmental Engineering (ICCOEE2020) under the banner of World Engineering, Science & Technology Congress (ESTCON2020) will be held from 13th to 15th July 2021 at Borneo Convention Centre, Kuching, Sarawak, Malaysia. This proceeding contains papers presented by academics and industrial practitioners showcasing the latest advancements and findings in civil engineering areas with an emphasis on sustainability and the Industrial Revolution 4.0. The papers are categorized under the following tracks and topics of research: 1. Resilient Structures and Smart Materials 2. Advanced Construction and Building Information Modelling 3. Smart and Sustainable Infrastructure 4. Advanced Coastal and Offshore Engineering 5. Green Environment and Smart Water Resource Management Systems

A collection of Bogolubov's papers on dynamical theory, which introduce the key concept of the hierarchy of relaxation times in statistical physics. A method of obtaining a system of coupled equations for the probability densities for groups of one or more particles is proposed. This has proved to be the most effective method in statistical mechanics for equilibrium and non-equilibrium to date. In his papers, Bogolubov clarifies how stochastic behaviour, which is specific for a macroscopic description, arises in a purely mechanistic approach, in which microscopic equations of dynamical theory are used.

Completely covers the diploma syllabus of various State Boards of Technical Education and AMIE Section – B for the course in Environmental Engineering.

Designing buildings and physical environments depends on social structure, social needs, economic data, environment, and technological development. Planning these environments is heavily influenced by cultural and regional need, the existing environment, and the materials available. Reusable and Sustainable Building Materials in Modern Architecture is an essential reference source that discusses the shaping of building design through culture and materials as well as the influence of environment on building design. Featuring research on topics such as passive design, ecological design, and urban design, this book is ideal for academicians, specialists, and researchers seeking coverage on culture, environment, and building design. The book covers the important aspects of water, air and noise pollution. Using a multidisciplinary approach, it highlights the impact of environmental pollution in the world. It also suggests methods for controlling and scientific monitoring of pollution-causing agents. Also included are chapters on efficient guidelines and standards, radioactive waste, solid waste disposal and sewage treatment, oil pollution and role of insecticides. Pollution in tanneries, fertilizer industry, and pulp and paper industries is also covered. The last few chapters are devoted to environmental management, benefit-cost analysis and mathematical modelling for environmental pollution control

Appropriate for undergraduate engineering and science courses in Environmental Engineering. Balanced coverage of all the major categories of environmental pollution, with coverage of current topics such as climate change and ozone depletion, risk assessment, indoor air quality, source-reduction and recycling, and groundwater contamination.

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