

## Civil Engineering Technology Unesco

Part II deals with agricultural science, alchemy, chemistry and chemical technology, mining and metallurgy military technology, textiles and manufacturing industries, mechanical technology, civil engineering, navigation and ship-building, medicine and pharmacy. Historians of Islamic science tend to limit their studies to the period up to the 16th century but, Part II of this volume also deals with the continuation of science and technology in the Ottoman Empire, India and Iran.

Education in science, technology, engineering and mathematics (STEM) is crucial for taking advantage of the prospects of new scientific discoveries initiating or promoting technological changes, and managing opportunities and risks associated with innovations. This book explores the emerging perspectives and methodologies of STEM education and its relationship to the cultural understanding of science and technology in an international context. The authors provide a unique perspective on the subject, presenting materials and experiences from non-European industrialized as well as industrializing countries, including China, Japan, South Korea, India, Egypt, Brazil and the USA. The chapters offer a wide scope of interpretations and comparative reviews of STEM education by including narrative elements about cultural developments, considering the influence of culture and social perceptions on technological and social change, and applying innovative tools of qualitative social research. The book represents a comprehensive and multidisciplinary review of the current status and future challenges facing STEM education across the world, including issues such as globalization, interdependencies of norms and values, effects on equity and social justice as well as resilience. Overall the volume provides valuable insights for a broad and comprehensive international comparison of STEM philosophies, approaches and experiences.

This report reviews engineering's importance to human, economic, social and cultural development and in addressing the UN Millennium Development Goals. Engineering tends to be viewed as a national issue, but engineering knowledge, companies, conferences and journals, all demonstrate that it is as international as science. The report reviews the role of engineering in development, and covers issues including poverty reduction, sustainable development, climate change mitigation and adaptation. It presents the various fields of engineering around the world and is intended to identify issues and challenges facing engineering, promote better understanding of engineering and its role, and highlight ways of making engineering more attractive to young people, especially women.--Publisher's description.

Seawater desalination is a rapidly growing coastal industry that is increasingly threatened by algal blooms. Depending on the severity of algal blooms, desalination systems may be forced to shut down because of clogging and/or poor feed water quality. To maintain stable operation and provide good feed water quality to seawater reverse osmosis (SWRO) systems, ultrafiltration (UF) pre-treatment is proposed. This research focused on assessing the ability of UF and other pre-treatment technologies to reduce biofouling in SWRO systems. An improved method to measure bacterial regrowth potential (BRP) was developed and applied at laboratory, pilot and full scale to assess the ability of conventional UF (150 kDa) and tight UF (10 kDa) alone and in combination with a phosphate adsorbent to reduce regrowth potential and delay the onset of biofouling in SWRO. The improved bacterial regrowth potential method employs a natural consortium of marine bacteria as inoculum and flow cytometry. The limit of detection of the BRP method was lowered to  $43,000 \pm 12,000$  cells/mL, which is equivalent to  $9.3 \pm 2.6$  µg-Cglucose/L. The reduction in bacterial regrowth potential after tight UF (10 kDa) was 3 to 4 times higher than with conventional UF (150 kDa). It was further reduced after the application of a phosphate adsorbent, independent of pore size of the UF membrane. Pilot studies demonstrated that the application of tight UF (10 kDa) coupled with a phosphate adsorbent consistently lowered the bacterial regrowth potential and no feed channel pressure drop increase was observed in membrane fouling simulators (MFS) over a period of 21 days. The study also showed that non-backwashable fouling of UF membranes varied strongly with the type of algal species and the algal organic matter (AOM) they release. The presence of polysaccharide (stretching -OH) and sugar ester groups (stretching S=O) was the main cause of non-backwashable fouling. In conclusion, this study showed that an improved BRP method is suitable for the assessment of SWRO pre-treatment systems and it can be a useful tool to develop potential strategies to mitigate biofouling and improve the sustainability of SWRO systems. Libro de abstracts del congreso celebrado en Santander en junio de 2013.

For integrated water resources management both blue and green water resources in a river basin and their spatial and temporal distribution have to be considered. This is because green and blue water uses are interdependent. In sub-Saharan Africa, the upper landscapes are often dominated by rainfed and supplementary irrigated agriculture that rely on green water resources. Downstream, most blue water uses are confined to the river channels, mainly for hydropower and the environment. Over time and due to population growth and increased demands for food and energy, water use of both green and blue water has increased. This book provides a quantitative assessment of green-blue water use and their interactions. The book makes a novel contribution by developing a hydrological model that can quantify not only green but also blue water use by many smallholder farmers scattered throughout the landscape. The book provides an innovative framework for mapping ecological productivity where gross returns from water consumed in agricultural and natural vegetation are quantified. The book provides a multi-objective optimization analysis involving green and blue water users, including the environment. The book also assesses the uncertainty levels of using remote sensing data in water resource management at river basin scale.

Hydro-Meteorological Hazards, Risks, and Disasters provides an integrated look at major atmospheric disasters that have had and continue to have major implications for many of the world's people, such as floods and droughts. . This volume takes a geoscientific approach to the topic, while also covering current thinking about some directly relevant social scientific issues that can affect lives and property. Hydro-Meteorological Hazards, Risks, and Disasters also contains new insights about how climate change affects hazardous processes. For the first time, information on the many diverse topics relevant to professionals is aggregated into one volume. Contains contributions from experts in the field selected by a world-renowned editorial board Cutting-edge discussion of natural hazard topics that affect the lives and livelihoods of millions of humans worldwide Numerous full-color tables, GIS maps, diagrams, illustrations, and photographs of hazardous processes in action

The continuing growth of urban populations throughout the world is one of the most frightening problems of today. The problems of megacities, i.e. those with more than 10 million inhabitants and which are growing fastest in developing countries, must be fully recognized within the context of the world environment.

Focuses on establishment of Federal scientific information storage and retrieval program.

With the encroachment of the Internet into nearly all aspects of work and life, it seems as though information is everywhere. However, there is information and then there is correct, appropriate, and timely information. While we might love being able to turn to Wikipedia® for encyclopedia-like information or search Google® for the thousands of links on a topic, engineers

need the best information, information that is evaluated, up-to-date, and complete. Accurate, vetted information is necessary when building new skyscrapers or developing new prosthetics for returning military veterans. While the award-winning first edition of *Using the Engineering Literature* used a roadmap analogy, we now need a three-dimensional analysis reflecting the complex and dynamic nature of research in the information age. *Using the Engineering Literature, Second Edition* provides a guide to the wide range of resources available in all fields of engineering. This second edition has been thoroughly revised and features new sections on nanotechnology as well as green engineering. The information age has greatly impacted the way engineers find information. Engineers have an effect, directly and indirectly, on almost all aspects of our lives, and it is vital that they find the right information at the right time to create better products and processes. Comprehensive and up to date, with expert chapter authors, this book fills a gap in the literature, providing critical information in a user-friendly format.

Soils formed or now existing under arid climatic conditions cover more than one-third of the world's land surface. Many have unique characteristics which can pose difficult geotechnical problems. This text considers these problems and suggests ways of overcoming them.

This book is a printed edition of the Special Issue "Urban Water Cycle Modelling and Management" that was published in *Water*

*Water* is an essential resource for mankind and our ecosystems. *Free Flow* is a fully illustrated book with over 100 authors work on water management and cooperation at international, regional, national, municipal and local levels. Their commentaries draw upon experiences around the world, reflecting how people are changing their interaction with water to improve sustainable development. The publication reflects progresses and challenges in these fields, highlighting good practices in a wide variety of societies and disciplines. The book strives to project experiences into future actions and encourages further institutional commitments to better understanding of and more effective management of water cooperation in order to achieve sustainable development.

*Global Tourism: Cultural Heritage and Economic Encounters* explores the connections among economy, sustainability, heritage, and identity that tourism and related processes make explicit. It illustrates how emerging theories of the economics of tourism can lead to the rethinking of traditionally non-touristic enterprises.

Sub-Saharan Africa has an irrigation potential of about 42 million hectares of which only 17% is developed. Despite several investments in irrigation the growth is slow. This study aims at helping to achieve sustainable irrigation in sub-Saharan Africa, through gaining a better understanding of productive irrigation water use and effective management of irrigation development. The study is conducted in the White Volta sub-basin specifically in Northern Ghana and Southern Burkina Faso which have been experiencing rapid irrigation development since the mid 1990s. The study identified growing markets for irrigated products as an important driving force behind the expansion of irrigation which has given rise to new technologies. The new technologies have spread because they gave farmers direct control over water sources. These new technologies allow relatively small farm sizes which can be adequately managed by the surveyed farmers. As a result high productivities are achieved. The hydrological impact of upscaling irrigation in the sub-basin is sustainable and will maximize the overall benefits derived from water resources in the Volta Basin.

This book resents expert knowledge, opinions and experiences, and provides valuable insight into the scope of problems involved in protecting schools and their occupants from earthquakes.

*Water Related Education, Training and Technology Transfer* is a component of *Encyclopedia of Water Sciences, Engineering and Technology Resources* in the global *Encyclopedia of Life Support Systems (EOLSS)*, which is an integrated compendium of twenty one Encyclopedias. Learning processes offer knowledge, skills, and competencies to the individual through different methods of education and training. The learning society and the concept of lifelong learning form the basis for the so-called "knowledge-based" economy. Since water resources development and management are an essential part of this economy, education, training, and transfer of technology for water resources should be seen as important aspects of societal policies for a sustainable future. This book starts with a little history, and introduces several issues related to water resources in the learning environment. What does the water profession expect from education? We must consider the methods and tools used the need to match demand and supply, and quality assessment of education and training. Transfer of technology to close the technology gap between countries can only be effective if an enabling learning environment exists. Capacity building must ensure that this environment is sustainable. This volume is aimed at the following five major target audiences: University and College students Educators, Professional practitioners, Research personnel and Policy analysts, managers, and decision makers and NGOs.

The *Kenya Gazette* is an official publication of the government of the Republic of Kenya. It contains notices of new legislation, notices required to be published by law or policy as well as other announcements that are published for general public information. It is published every week, usually on Friday, with occasional releases of special or supplementary editions within the week.

This second companion volume on engineering studies considers engineering practice including contextual analyses of engineering identity, epistemologies and values. Key overlapping questions examine such issues as an engineering identity, engineering self-understandings enacted in the professional world, distinctive characters of engineering knowledge and how engineering science and engineering design interact in practice. Authors bring with them perspectives from their institutional homes in Europe, North America, Australia and Asia. The volume includes 24 contributions by more than 30 authors from engineering, the social sciences and the humanities. Additional issues the chapters scrutinize include prominent norms of engineering, how they interact with the values of efficiency or environmental sustainability. A concluding set of articles considers the meaning of context more generally by asking if engineers create their own contexts or are they created by contexts. Taken as a whole, this collection of original scholarly work is unique in its broad, multidisciplinary consideration of the changing character of engineering practice.

Nitrogen rich wastewaters (10-400 mg N L<sup>-1</sup>) are usually produced by municipal, industrial and agricultural wastes, such as effluents from anaerobic treatments. These represent a risk to the environment due to the high nutrient concentrations (nitrogen and phosphorous), which can cause eutrophication of water bodies, deteriorating the quality of the ecosystems. As a solution, the potential nitrogen removal capacity of a novel bio-treatment system, namely the Photo-Activated Sludge (PAS), which is composed of microalgae and bacteria consortia, is presented in this thesis. This novel bio-treatment is based on the symbiosis between microalgae, nitrifiers and heterotrophic bacteria (microalgal-bacterial consortia). Experimental work using photobioreactors for the cultivation of microalgae and bacteria under sequencing batch conditions showed that microalgal-bacterial consortia can remove ammonium 50% faster than solely microalgal consortia. The increase in ammonium removal rates was due to the action of nitrifying bacteria, supplied with oxygen produced by algae. Nitrification was the main ammonium removal mechanism within the microalgal-bacterial biomass, followed by algal uptake and nutrient requirements for bacterial growth. Carbon oxidation and denitrification were the main removal mechanisms for organic carbon. Hence, the role of algae within the microalgal-bacterial system is to provide oxygen to support the aerobic processes. The microalgal-bacterial system offers the possibility of reducing the hydraulic retention time, which can decrease the large area requirements often demanded by algal systems.

This book presents five case studies on the development of post-secondary engineering education in Canada, Japan, Venezuela, Pakistan, and Scotland. An introduction to the case studies take a long, historical and sociological look at the development of technical education and in particular reviews the industrial revolution and education, and the earliest institutions specifically devoted to technical education. A discussion of recent developments touches on cooperative education and training, continuing education, and distance learning, and concludes that despite the many changes and innovations that are sure to occur, there will probably not be any one superior system of technological education that will be discovered and used by all. The case studies are as follows: (1) "The Education and Practice of Engineers and Technologists in Canada" (Glenn A. Morris); (2) "Technological Education in Japan" (Lawrence P. Grayson); (3) "Engineering and Technical Education in Pakistan" (Mohammad Authaulah); (4) "Engineering and Technical Education in the United Kingdom--The Early Years and Subsequent Developments in Scotland" (James Murray and Wilfred Fishwick); and (5) "A Critical Review of the Development, the Problems and the Future of Technological Education in Venezuela" (Edgar R. Yajure). The introduction, and the studies on Canada, Japan, and Venezuela each cite several references. (JB)

"There are many world heritage sites in Germany. Most of them are constructed of or with natural stones. These sites are commonly presented to the public with a lot of information regarding historical, cultural, and artistic aspects. Mostly there is no focus on the main building material, if it concerns natural stone. This work aims to show that it is precisely the natural stone that lends the sites their distinctive character. The used stones demonstrate the context and the interaction with the geology of the surrounding countryside as well as possibilities of transport and treatment. They reflect culture and society at the time of the building phases. The second part of the work presents the most important stones that were used at these sites, along with their occurrences, aspects of quarrying in historical times and of course their petrographical, mineralogical and technical features. It is shown how these features influence the weathering of the stones and how restoration of stones is carried out. The book will serve as a useful source book for geologists, archaeologists, architects, representatives of the natural stone industry, historians and cultural heritage management professionals specifically and for academic and non-academic communities, travellers and tourism industry operators in general"--

During 2009, the Giza Plateau Mapping Project carried out excavations at two sites as part of its ongoing research program: 1) the settlement connected to the Khentkawes Monument on the Giza Plateau and 2) the nearby town, Heit el-Ghurab (aka Lost City of the Pyramids). The 2009 work yielded some important discoveries such as evidence that the 4th Dynasty Khentkawes Town was in fact occupied into the 5th Dynasty with reoccupation later, probably in the 6th Dynasty. The major discovery was the remains of a previously unknown valley complex off the east end of the Khentkawes Town made up of corridors, ramps, and stairs descending into a depression that may prove to be a harbor. This collection of papers by archaeologists and specialists details the results of the excavations and additional work carried out in 2009. The book is well illustrated with abundant maps and photographs, along with large foldout maps and isometric drawings.

This is the first book of a series that will focus on MMS (Mechanism and Machine Science). This book also presents IFToMM, the International Federation on the Promotion of MMS and its activity. This volume contains contributions by IFToMM officers who are Chairs of member organizations (MOs), permanent commissions (PCs), and technical committees (TCs), who have reported their experiences and views toward the future of IFToMM and MMS. The book is composed of three parts: the first with general considerations by high-standing IFToMM persons, the second chapter with views by the chairs of PCs and TCs as dealing with specific subject areas, and the third one with reports by the chairs of MOs as presenting experiences and challenges in national and territory communities. This book will be of interest to a wide public who wish to know the status and trends in MMS both at international level through IFToMM and in national/local frames through the leading actors of activities. In addition, the book can be considered also a fruitful source to find out "who's who" in MMS, historical backgrounds and trends in MMS developments, as well as for challenges and problems in future activity by IFToMM community and in MMS at large.

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