

Mechanical Engineering Mekelle University

1,1 Applications of Slurry Transport Vast tonnages are pumped every year in the form of solid-liquid mixtures, known as slurries. The application which involves the largest quantities is the dredging industry, continually maintaining navigation in harbours and rivers, altering coastlines and winning material for landfill and construction purposes. As a single dredge may be required to maintain a throughput of 7000 tonnes of slurry per hour or more, very large centrifugal pumps are used. Figures 1-1 and 1-2 show, respectively, an exterior view of this type of pump, and a view of a large dredge-pump impeller (Addie & Helmley, 1989). The manufacture of fertiliser is another process involving massive slur- transport operations. In Florida, phosphate matrix is recovered by huge draglines in open-pit mining operations. It is then slurried, and pumped to the wash plants through pipelines with a typical length of about 10 kilometres. Each year some 34 million tonnes of matrix are transported in this manner. This industry employs centrifugal pumps that are generally smaller than those used in large dredges, but impeller diameters up to 1.4 m are common, and drive capacity is often in excess of 1000 kW. The transport distance is typically longer than for dredging applications, and Chapter 1 Figure LI. Testing a dredge pump at the GIW Hydraulic Laboratory

Figure 1. 2. Impeller for large dredge pump 1. Introduction 3 hence a series of pumping stations is often used. Figure 1-3 shows a boost-pump installation in a phosphate pipeline. The fourth edition of The Guide to Higher Education in Africa contains reliable and up-to-the-minute information on higher education throughout Africa - over 900 institutions in 47 countries, plus details of national education systems and agencies - in a single reference source.

This two-volume set constitutes the refereed post-conference proceedings of the 8th International Conference on Advancement of Science and Technology, ICAST 2020, which took place in Bahir Dar, Ethiopia, in October 2020. The 74 revised full papers were carefully reviewed and selected from more than 200 submissions of which 157 were sent out for peer review. The papers present economic and technologic developments in modern societies in 6 tracks: Chemical, food and bio-process engineering; Electrical and computer engineering; IT, computer science and software engineering; Civil, water resources, and environmental engineering; Mechanical and industrial engineering; Material science and engineering.

The UK model of incentive regulation of power grids was at one time the most advanced, and elements of it were adopted throughout the EU. This model worked well, particularly in the context of limited investment and innovation, a single and strong regulatory authority, and

limited coordination between foreign grid operators. This enlightening book shows that since 2010 the whole context has changed and regulation has had to catch-up and evolve. The EU is entering a wave of investment, and an era of new services and innovation which has created growing tensions between national regulatory authorities in terms of coordinating technical standards and distribution systems. This is being played out against an increasingly disruptive backdrop of digitization, new market platforms and novel business models.

Guide to Higher Education in Africa, 4th Edition

Machine Drawing

Dynamics in Logistics

Theory and Applications

African Higher Education

The Properties of Engineering Materials

As advancements in technology continue to influence all facets of society, its aspects have been utilized in order to find solutions to emerging ecological issues. Creating a Sustainable Ecology Using Technology-Driven Solutions highlights matters that relate to technology driven solutions towards the combination of social ecology and sustainable development. This publication addresses the issues of development in advancing and transitioning economies through creating new ideas and solutions; making it useful for researchers, practitioners, and policy makers in the socioeconomic sectors.

The utilisation of renewable energies is not at all

new; in the history of mankind renewable energies have for a long time been the primary possibility of generating energy. This only changed with industrial revolution when lignite and hard coal became increasingly more important. Later on, also crude oil gained importance. Offering the advantages of easy transportation and processing also as a raw material, crude oil has become one of the prime energy carriers applied today. Moreover, natural gas used for space heating and power provision as well as a transportation fuel has become increasingly important, as it is abundantly available and only requires low investments in terms of energy conversion facilities. As fossil energy carriers were increasingly used for energy generation, at least by the industrialised countries, the application of renewable energies decreased in absolute and relative terms; besides a few exceptions, renewable energies are of secondary importance with regard to overall energy generation.

300 million powerpoint presentations are given daily, yet there is a disconnect between the amazing technology of powerpoint and a mediocre student learning experience. To unleash the full potential of powerpoint presentations, we must do a better job of creating presentations that fit the educational needs of students. Slides for Students does just that. Slides for Students is an open and honest discussion about powerpoint in the classroom. A need exists for thoughtfully designed and implemented classroom instruction that focuses on the learner rather than on

the technology. This book was written to translate academic research findings into practical suggestions about powerpoint that educators can use. Divided into two parts, Slides for Students discusses the history of powerpoint, explores academic studies on the topic, and demonstrates how to design slides to best suit educational needs and engage with students to avoid the dreaded "death by powerpoint."

This book presents select proceedings of the 3rd International Conference on Computational and Experimental Methods in Mechanical Engineering (ICCEMME 2021). It gives an overview of recent developments in the field of fluid dynamics and thermal engineering. Topics covered include case studies in thermal engineering, combustion engines, computational fluid dynamics (cfD), cooling systems, energy conservation, energy conversion, renewable energy, bio fuels, gas turbines, heat exchangers and heat transfer systems, heat pipes and pumps, heat transfer augmentation, refrigeration and HVAC systems, fluids engineering, energy and process, and thermal power plants. The book will be useful for researchers and professionals working in the area of thermal engineering and allied fields.

Geo-trekking in Ethiopia's Tropical Mountains

System Engineering Analysis, Design, and Development

Education Statistics Annual Abstract

Slides for Students

Futuristic Trends in Intelligent Manufacturing

Recent Trends in Thermal Engineering

Detective Vikram is delineated as an established sleuth with a brilliant track record. One day during travel, he is kept under spell by a phantom who narrates to him the twenty five cases of crime. Detective Vikram too solves all the investigation puzzles except the twenty-fifth case and wins his freedom from the spell of the phantom. This book has taken nearly four years to complete. The stories are based on the bizarre events that are taking place the world over at all strata of society. They are intended to entertain and, at the same time, make the readers look in a different way at the results of each investigation. They can at least use the knowledge gained from the case studies for guarding against the shockingly evil intentions of some people who appear good and act very close to them in everyday life. Call it ripping the mask, reading between the lines or moving a few steps forward, reading the words behind the eyes of the person with whom we communicate, whatever! The stories unveil true human nature, good and bad, for the benefit of the readers. The case studies or stories, as they can be called, are entirely fictitious and the characters are just based on the author's imagination. They do not refer to any real life episode or a person or persons, living or dead.

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Praise for the first edition: "This excellent text will be useful to every system engineer (SE) regardless of the domain. It covers ALL relevant SE material and does so in a very clear, methodical fashion. The breadth and depth of the author's presentation of SE principles and practices is outstanding." –Philip Allen This textbook presents a comprehensive, step-by-step guide to System

Engineering analysis, design, and development via an integrated set of concepts, principles, practices, and methodologies. The methods presented in this text apply to any type of human system -- small, medium, and large organizational systems and system development projects delivering engineered systems or services across multiple business sectors such as medical, transportation, financial, educational, governmental, aerospace and defense, utilities, political, and charity, among others. Provides a common focal point for “bridging the gap” between and unifying System Users, System Acquirers, multi-discipline System Engineering, and Project, Functional, and Executive Management education, knowledge, and decision-making for developing systems, products, or services Each chapter provides definitions of key terms, guiding principles, examples, author’s notes, real-world examples, and exercises, which highlight and reinforce key SE&D concepts and practices Addresses concepts employed in Model-Based Systems Engineering (MBSE), Model-Driven Design (MDD), Unified Modeling Language (UMLTM) / Systems Modeling Language (SysMLTM), and Agile/Spiral/V-Model Development such as user needs, stories, and use cases analysis; specification development; system architecture development; User-Centric System Design (UCSD); interface definition & control; system integration & test; and Verification & Validation (V&V)

Highlights/introduces a new 21st Century Systems Engineering & Development (SE&D) paradigm that is easy to understand and implement. Provides practices that are critical staging points for technical decision making such as Technical Strategy Development; Life Cycle requirements; Phases, Modes, & States; SE Process; Requirements Derivation; System Architecture Development, User-Centric System Design (UCSD); Engineering Standards, Coordinate Systems, and Conventions; et al. Thoroughly illustrated, with end-of-chapter exercises and numerous case studies and examples, Systems Engineering Analysis, Design, and Development, Second Edition is a primary textbook for multi-discipline, engineering, system analysis, and project management undergraduate/graduate level students and a valuable reference for professionals. This book covers recent research and trends in Manufacturing Engineering. The chapters emphasize different aspects of the transformation from materials to products. It provides the reader with fundamental materials treatments and the integration of processes. Concepts such as green and lean manufacturing are also covered in this book.

Where Are You From?

**Doctoral Training and Higher Education in Africa
Select Proceedings of ICCEMME 2021**

The Effective Use of Powerpoint in Education

Fuzzy Hybrid Computing in Construction Engineering

and Management

Precision Manufacturing

This book constitutes the proceedings of the Second International Conference on Information and Communication Technology for Development for Africa, ICT4DA 2019, held in Bahir Dar, Ethiopia, in May 2019. The 29 revised full papers presented were carefully reviewed and selected from 69 submissions. The papers address the impact of ICT in fostering economic development in Africa. In detail they cover the following topics: artificial intelligence and data science; wireless and mobile computing; and Natural Language Processing.

Citizenship, indigenisation, inter-ethnic marriages and youthful exuberance are the core of WHERE ARE YOU FROM?. The novel questions the true meaning of federalism and highlights the frustration and disappointment young Nigerians face in their quest to succeed in a place where there are differences in background. It is an expose on how one can be lost in a country of one

This book constitutes the refereed post-conference proceedings of the 6th International Conference on Advancement of Science and Technology, ICAST 2018, which took place in Bahir Dar, Ethiopia, in

October 2018. The 47 revised full papers were carefully reviewed and selected from 71 submissions. The papers present economic and technologic developments in modern societies in five tracks: agro-processing industries for sustainable development, water resources development for the shared vision in blue Nile basin, IT and computer technology innovation, recent advances in electrical and computer engineering, progresses in product design and system optimization.

The growing impact of university rankings on public policy and on students choices has stirred controversy worldwide. This unique volume brings together the architects of university rankings and their critics to debate the uses and misuses of existing rankings. With voices from five continents, it provides a comprehensive overview of current thinking on the subject and sets out alternative approaches and complementary tools for a new era of transparent and informed use of higher education ranking tables.

Detective Vikram and the Phantom
Standard Handbook of Machine Design

9th EAI International Conference, ICAST 2021, Hybrid Event, Bahir Dar, Ethiopia, August 27-29, 2021, Proceedings, Part I

Social Networking and Community Behavior Modeling: Qualitative and Quantitative Measures

Recent Advances in Sustainable Technologies

"Intermediate Financial Accounting Volume 1 by G. Arnold and S. Kyle, developed in collaboration by Athabasca University and Lyryx, is intended for a first course in Intermediate Financial Accounting, and presumes that students have already completed one or two Introductory Financial Accounting courses. The textbook reflects current International Financial Reporting Standards (IFRS), such as IFRS 15 - Revenue from Contracts With Customers. This textbook provides a review of introductory accounting concepts and covers all topics essential to a first level Intermediate Accounting course: the conceptual framework and current landscape of financial reporting; statements of financial position; comprehensive income; cash flows and shareholders' equity; cash and receivables; revenue; inventory; property, plant and equipment; intangible assets; and intercorporate investments. For those requiring preparation for CPA designation, competencies as outlined by the CPA are

addressed in this textbook. For a detailed competency map, please contact us at info@lyryx.com. It also focuses on more difficult intermediate accounting topics that match prerequisite requirements for students advancing to a second level Intermediate Financial Accounting course. Topics that are covered in Advanced Financial Accounting courses, such as consolidations and foreign exchange, are not included here."--BCcampus website.

These proceedings contain research presented at the 6th International Conference on Dynamics in Logistics, held in February 2018. The integration of dynamics within the modeling, planning and control of logistic processes and networks has shown to contribute massively to the improvement of the latter. Moreover, diversification of markets and demand has increased both the complexity and the dynamic changes of problems within the area of logistics. To cope with these challenges, it must become possible to identify, describe and analyze such process changes. Moreover, logistic processes and networks must be revised to be rapidly and flexibly adaptable to continuously changing conditions. This book presents new ideas to solve such problems,

offering technological, algorithmic and conceptual improvements. It primarily addresses researchers and practitioners in the field of industrial engineering and logistics.

Social Networking and Community Behavior Modeling: Qualitative and Quantitative Measures provides a clear and consolidated view of current social network models. This work explores new methods for modeling, characterizing, and constructing social networks. Chapters contained in this book study critical security issues confronting social networking, the emergence of new mobile social networking devices and applications, network robustness, and how social networks impact the business aspects of organizations.

Fundamentals of Biomechanics introduces the exciting world of how human movement is created and how it can be improved.

Teachers, coaches and physical therapists all use biomechanics to help people improve movement and decrease the risk of injury.

The book presents a comprehensive review of the major concepts of biomechanics and summarizes them in nine principles of biomechanics. Fundamentals of Biomechanics concludes by showing how these principles

can be used by movement professionals to improve human movement. Specific case studies are presented in physical education, coaching, strength and conditioning, and sports medicine.

***Slurry Transport Using Centrifugal Pumps
Detective Vikram and the Phantom: Twenty five cases of crime Part 1***

Concepts, Principles, and Practices

Advances of Science and Technology

Qualitative and Quantitative Measures

Biofabrication

Recent Trends in Thermal Engineering
Select Proceedings of ICCEMME 2021
Springer Nature
Employing a technological rather than scientific approach, this edition continues to provide a descriptive and quantitative treatment of materials science for engineers.

This book presents select proceedings of the International Conference on Advances in Sustainable Technologies (ICAST 2020), organized by Lovely Professional University, Punjab, India. The topics covered in this book are multidisciplinary in nature. The primary topics included in the book are from the domains of automobile engineering, mechatronics, material science and engineering, aerospace engineering, bio-mechanics, biomedical instrumentation, mathematical techniques, agricultural engineering, nuclear engineering, physics, biodynamic modelling and ergonomics etc. The contents of this book will be beneficial for beginners, researchers, and professionals alike.

How engineered materials and machines powered by living biological cells can tackle technological challenges in medicine, agriculture, and global security. You are a biological machine whose movement is powered by skeletal muscle, just as a car is a machine whose movement is powered by an engine. If you can be built from the bottom up with biological materials, other machines can be as well. This is the conceptual starting point for biofabrication, the act of building with living cells--building with biology in the same way we build with synthetic materials. In this volume in the MIT Press Essential Knowledge series, Ritu Raman offers an accessible introduction to biofabrication, arguing that it can address some of our greatest technological challenges. After presenting the background information needed to understand the emergence and evolution of biofabrication and describing the fundamental technology that enables building with biology, Raman takes deep dives into four biofabrication applications that have the potential to affect our daily lives: tissue engineering, organs-on-a-chip, lab-grown meat and leather, and biohybrid machines. Organs-on-a-chip (devices composed of miniature model tissues), for example, could be used to test new medicine and therapies, and lab-grown meat could alleviate environmental damage done by animal farming. She shows that biological materials have abilities synthetic materials do not, including the ability to adapt dynamically to their environments. Exploring the principles of biofabrication, Raman tells us, should help us appreciate the beauty, adaptiveness, and persistence of the biological machinery that drives our bodies and our world.

Optimization and Intelligence in Manufacturing

6th EAI International Conference, ICAST 2018, Bahir Dar, Ethiopia, October 5-7, 2018, Proceedings

Intermediate Financial Accounting

8th EAI International Conference, ICAST 2020, Bahir Dar, Ethiopia, October 2-4, 2020, Proceedings, Part II

Modern Manufacturing Engineering

Fulbright Scholar Program, Grants for Faculty and Professionals

This book is based on over 150 scientific papers about the Dogu'a Tembien district in Ethiopia. To reach a broader public of people interested in geosites and human-environment interactions, the authors here add a geoguide about this mountain district in Ethiopia (13°30' N, 39°10' E; upto 2850 m high) which shows a varied lithology. A large team has carried out research in that district over the past 23 years, including long stays in the areas. Numerous viewpoints and geosites are only accessible on foot; hence the authors prepared the book as a trekking guide, which will enhance sustainable tourism in the same time. This edited work summarises the study results in the international literature into a comprehensive book, which comprises 35 thematic chapters, detailed description of 573 km of trekking routes to access the landscape and the most scenic excursion points, as well as the necessary logistical information. A state-of-the-art trekking map is included as a digital annex.

Recent developments in the theoretical and practical problems of porous media physics are reviewed in this volume. The main emphasis is on the interdisciplinary nature of transport phenomena in porous media study. State-of-the-art reviews and descriptions of innovative research in progress are

reported. A broad spectrum of problems and techniques related to porous media physics is presented. Fundamental questions currently under investigation provide a unifying theme in this volume, helping the reader to understand the problems and research trends in the field. The first part focuses on general problems and techniques. Phenomenological aspects of averaging techniques, the hierarchy of scales that are involved in real porous media and the related scaling problems of multiphase, multicomponent transport phenomena are examined with the emphasis on providing the basic scientific background for a variety of applications. Sometimes, theory comes very close to applications, and occasionally they diverge. This timely treatise demonstrates that both is now the case in porous media physics. This volume will prove an indispensable reference source for all those interested in resolving discrepancies through innovative research work, and inspiring new advances in the field.

The book is an excellent introduction to the anatomy of an automobile and the functions of its major and minor components. It brings together all the conventional and modern concepts in automobile engineering in a clear, practical style appropriately supported by line sketches, isometric views, cut-away diagrams and photographs. All the recent advances in automobiles such as automatic transmission, anti-lock braking system, traction control, power-assisted brakes, power steering, electric car, electronic control concepts, special fuels, and modern materials are also covered. Important tips for troubleshooting and maintenance are also given in a separate

chapter. The text is designed to provide students with an excellent foundation in automobile engineering, and also to serve as a useful reference for industry personnel engaged in design, manufacturing, repair, maintenance, and marketing of automobiles. As a textbook, it caters to the requirement of undergraduate students of mechanical engineering for their paper on Automobile Engineering. For those pursuing degree and diploma courses in the Automobile Engineering branch, this book is an excellent introduction for more advanced studies on different systems of automobiles.

The latest ideas in machine analysis and design have led to a major revision of the field's leading handbook. New chapters cover ergonomics, safety, and computer-aided design, with revised information on numerical methods, belt devices, statistics, standards, and codes and regulations. Key features include: *new material on ergonomics, safety, and computer-aided design; *practical reference data that helps machines designers solve common problems--with a minimum of theory. *current CAS/CAM applications, other machine computational aids, and robotic applications in machine design. This definitive machine design handbook for product designers, project engineers, design engineers, and manufacturing engineers covers every aspect of machine construction and operations. Voluminous and heavily illustrated, it discusses standards, codes and regulations; wear; solid materials, seals; flywheels; power screws; threaded fasteners; springs; lubrication; gaskets; coupling; belt drive; gears; shafting; vibration and control; linkage; and

corrosion.

Electricity Network Regulation in the EU

An International Reference Handbook

Heat and Mass Transfer in Porous Media

'Ityopyā, 'āmatāwi yastāistikis maṣḥét

Mechanics and Control

The Dogu'a Tembien District

This book is a guide for students, researchers, and practitioners to the latest developments in fuzzy hybrid computing in construction engineering and management. It discusses basic theory related to fuzzy logic and fuzzy hybrid computing, their application in a range of practical construction problems, and emerging and future research trends.

Written for senior level or first year graduate level robotics courses, this text includes material from traditional mechanical engineering, control theoretical material and computer science. It includes coverage of rigid-body transformations and forward and inverse positional kinematics. Drawing on insights from across Africa, this book investigates the discourses and practices that guide doctoral training today. Higher education is regarded as key for driving development and innovation, creating an informed knowledge base equipped to tackle local and global challenges. For too long external forces defined education in the continent, but now African countries are revitalising higher education, designing doctoral training to fit distinctly African needs and

contexts. This book investigates the history, present, and future potential of doctoral training on international, regional, national and institutional levels. Bringing together expertise from both research and practice, the book analyses the frameworks and structures of the doctoral phase, and how institutions, supervisors, mentors and young scholars meet the challenges of training in real life. The book covers issues such as access to education, proactive recruitment, funding issues, practitioner expertise, enrolment and drop-out, across a range of countries including South Africa, Mozambique, Ethiopia, Nigeria, Benin, Ghana and Morocco. This book will be a rich resource for higher education administrators and policy makers, as well as researchers and academics with an interest in higher education in Africa.

About the Book: Written by three distinguished authors with ample academic and teaching experience, this textbook, meant for diploma and degree students of Mechanical Engineering as well as those preparing for AMIE examination, incorporates the latest st

Select Proceedings of ICAST 2020

Rankings and Accountability in Higher Education: Uses and Misuses

Technology, Economics and Environment

AUTOMOBILE ENGINEERING

The Challenges Ahead for Transmission and Distribution

Creating a Sustainable Social Ecology Using Technology-driven Solutions

This book shows how Industry 4.0 is a strategic approach for integrating advanced control systems with Internet technology enabling communication between people, products and complex systems. It includes processes such as machining features, machining knowledge, execution control, operation planning, machine tool selection and cutting tool. This book focuses on different articles related to advanced technologies, and their integration to foster Industry 4.0, being useful for researchers as well as industrialists to refer and utilize the information in production control.

Precision Manufacturing provides an introduction to precision engineering for manufacturing. With an emphasis on design and performance of precision machinery for manufacturing – machine tool elements and structure, sources of error, precision machining processes and process models sensors for process monitoring and control, metrology, actuators, and machine design. This book will be of interest to design engineers, quality engineers and manufacturing engineers, academics and those who may or may not have previous experience with precision manufacturing, but want to learn more.

Explores several facets of higher education in Africa, including a history of available resources, the scope of such education in each African nation, and current issues affecting the system.

Introduction to Robotics

Fundamentals of Biomechanics

Renewable Energy

Proceedings of the 6th International Conference LDIC

2018, Bremen, Germany

Journal of Acoustic Emission

Information and Communication Technology for

Development for Africa